

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF
HARVARD UNIVERSITY—NO. CXXIII

NOTEWORTHY PLANTS OF SOUTHEASTERN VIRGINIA

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(Plates 509–535)

PART I. ITINERARY OF FOUR FIELD-TRIPS

RENEWING¹ our studies of the Coastal Plain of southeastern Virginia, again with our center at the Biological Laboratory of the University of Richmond, where we enjoyed the cordial and renewed hospitality of Professors Bailey and Smart and their associates and again had the efficient help of Mr. Carroll Williams, my companion in the Virginia work, Mr. Bayard Long, and I endeavored to start with the flora in spring and to keep interruptedly abreast with it until late autumn in 1937. The spring was not an advanced one but in early April (3–9) we collected more than 150 species in the area bounded by the outer Piedmont (along automobile Route 1) and the Dismal Swamp—at least 5 of the species new to Virginia, some (like *Draba brachycarpa* and *Sedum Nevii*) at probably their southeastern limits in the state, and still others (*Arabis virginica*, *Viola hirsutula*, *Obolaria virginica*, *Phlox nivalis* and *Plantago heterophylla*) certainly very local or rare in the area. We were induced to enter the Piedmont in southwestern Dinwiddie, northwestern Brunswick and southeastern Mecklenburg Counties because friends who are ordinarily keen observers had reported extensive sandy pine barrens in the last county, along Route 1. The ubiquitous heavy red clay and the ledges along the streams were, however, so unlike sandy pine barren that their report was obviously based on observations along some other route; possibly Route 158. Along the latter road, in eastern Southampton County, from about six miles south of Franklin to the Nottoway at Smith's Ferry, there occurs a considerable extent of pineland (in some places quite as defi-

¹ For preceding studies see Fernald & Griscom, *Three Days of Botanizing in Southeastern Virginia*, RHODORA, xxxvii. 129–157 and 167–189 (1935)—Contrib. Gray Herb. no. CVII; Fernald, *Midsummer Vascular Plants of Southeastern Virginia*, RHODORA, xxxvii. 378–413 and 423–554 (1935)—Contrib. Gray Herb. no. CIX; Fernald, *Plants from the Outer Coastal Plain of Virginia*, RHODORA xxxviii. 376–404 and 414–452 (1936)—Contrib. Gray Herb. no. CXV; *Local Plants of the Inner Coastal Plain of Southeastern Virginia*, RHODORA, xxxix. 321–366, 379–415, 433–459 and 465–491 (1937)—Contrib. Gray Herb. no. CXX.

nitely sandy pine barren as the area in Isle of Wight County), an area which, later in the year, gave us many surprises. On our last day in the field in early April we found our car bogged in particularly "slick" mud of the always "slippery when wet" Miocene clay, on a side-road. I undertook my part in attempting to lift the car out but, weakened by a severe attack of the grippe from which I had not wholly recovered, I strained my heart to such an extent that I was laid aside for repair and it was September (6-20) before I could renew the Virginia work. Long was with me and Carroll Williams, fortunately, could drive us and help us. I was, most happily, the personal guest during this trip of Dean and Mrs. Raymond B. Pinchbeck, whose true hospitality allowed me to go and come at all hours.

In 1886 the late Lester F. Ward stated that *Sabatia lanceolata* "was collected near Ashland, about seventeen miles north of Richmond. It was seen at one or two more southerly points";¹ and Merriman cites it from "Low pine lands" in his *Flora of Richmond and Vicinity*. We had never met this very characteristic species, now known as *S. difformis* (L.) Druce, anywhere in the state. In fact, it is not represented in the Gray Herbarium from between its northern limit, in southern New Jersey and Delaware, and eastern North Carolina; nor is it listed for Maryland and the District of Columbia. Our first day's exploration, in pouring rain, was, consequently, about Ashland and adjacent areas. The modern automobile route does not always follow the old road of Ward's time; at least we did not find *Sabatia difformis* nor any Coastal Plain types of note. We were in the border of the Piedmont and drove north as far as Milford in Caroline County, but the really noteworthy records were few, although *Sanicula Smallii* Bicknell, cited by Small (Man.) as occurring northward only to North Carolina, was in rich woods near Gum Tree, and the Asiatic *Celastrus orbiculatus* Thunb. grew in a dense tangle with native *Smilax* south of Milford. After this rather fruitless day to the north and at the edge of the Piedmont we stuck very faithfully to the Coastal Plain from Dinwiddie County to the North Carolina line, thence eastward to Nansemond, with an afternoon on the Peninsula of Virginia (Grimes's territory). As in April, the bottomlands of all the rivers were drowned, so that these rich habitats, upon which we had so much counted, were essentially inaccessible, though we did reach a few spots on the uppermost terraces and there added to the Coastal

¹ L. F. Ward, *Notes on the Flora of Eastern Virginia*, Bot. Gaz. xi. 36 (1886).

Plain flora such species of the interior as *Spiranthes ovalis* and *Solidago arguta*.

The pinelands and pine barrens, which we had seen south of Franklin in April, naturally soon attracted us. Here species which had previously been known in Virginia only at our station in Isle of Wight County were found: *Quercus laevis* the common oak; and *Stillingia sylvatica* and *Carphephorus bellidifolius* both abundant. The outer coastal sands of Princess Anne County were at once suggested by the abundance of *Triplasis purpurea*, *Panicum Commonsianum*, *Cyperus filiculmis* var. *oblitus* and *Quercus cinerea* (heretofore known in the state only on the dunes of Cape Henry). *Phlox nivalis*, unusually large, was locally abundant, here about 25 miles east of the easternmost Virginia station of Wherry;¹ *Asimina parviflora*, in fruit, was scattered; and much of the *Trichostema dichotomum* was the southern var. *puberulum* (heretofore known in the state only from Norfolk County). *Tradescantia rosea*, var. *graminea* (*Cuthbertia graminea* Small), locally very abundant, was new to the Virginia flora, as was *Stenophyllus ciliatifolius*, growing with it; and singular plants in *Desmodium* (PLATE 523) and *Sanicula* (PLATE 527) prove to be undescribed varieties. For many years *Chrysopsis gossypina* has been credited to Virginia, but I recently pointed out that I have seen no vouchers for the record; and Small, in his Manual, queried its occurrence so far north. We were, consequently, delighted, at the best station of *Phlox nivalis*, to walk into an extensive colony of something related to *Chrysopsis gossypina*. It proves, however, to be quite distinct from it in technical characters of achene, corolla and involucre and is evidently an endemic and undescribed species (PLATE 531, FIGS. 1-4).

In our previous trips on the main road from Petersburg to Suffolk we had concentrated on a stretch of pineland northwest of Waverly. This time, noticing that the pineland immediately east of the town was partly unspoiled, we tried it and were rewarded by the discovery of a really extensive station of *Hypericum setosum*, with gigantic *Liatris spicata*, a plant of the interior, in Virginia and the Carolinas often on the higher mountains, but unrepresented in the Gray Herbarium as a pine-barren species except at the south, from Florida to Wilmington, North Carolina. With it, new to Virginia, was the large extreme of *Polygala cruciata* (var. *cuspidata* (H. & A.) Wood), the plant treated by Small as *P. ramosior* ("Fla. to La. and N. C.").

¹ Wherry in *Bartonia*, No. 11: 12, 13 (1929).

In southeastern Virginia *Oxypolis rigidior* is somewhat localized and apparently often an indicator of good pine-barren bog. Consequently when, just outside the town of Wakefield, we saw it in a small boggy depression we shouted for Carroll to stop. There was perhaps an acre of sphagnous depression, bordered on one side by low woods, on another by the road and on a third by a rapidly encroaching cultivated field. The bog cannot hold out much longer against destruction by man; in fact, the broadening of the road now going on is taking an important slice of it. With the obliteration of this bog there will be destroyed colonies of such great rarities as *Ctenium aromaticum* (we know only three colonies), *Dioscorea hirticaulis*, *Cleistes divaricata* and *Sarracenia purpurea* var. *venosa*. The destruction will also include our first colony in the state of *Erianthus compactus* and the first colony known north of North Carolina of *Paspalum praecox* var. *Curtisianum* (*P. lentiferum*).

We had never found southeastern Nansemond County, immediately west of the Dismal Swamp, of great botanical interest and Kearney's report gives few specialties from that region, though central and western Nansemond, from the region of Whaleyville to the Blackwater is less ordinary. Perhaps we have not found the best spot; but upon the collecting-paper containing, as representative of the meagre flora, a *Panicum* or *Paspalum* fully mature but only 2 cm. high, Long expressed his emotions by writing "Sacred to the memory of Baines Hill School." But this half of Nansemond has, in reality, some really interesting plants; the difficulty is getting to them over the usually too "slick" back-roads. *Carphephorus tomentosus*, remarkably large and showy (up to 7.5 dm. high, with 40 blazing-purple heads) was frequent in wet pineland both east and west of Whaleyville. *Desmodium rhombifolium* was almost common; in one flooded cypress swamp we got typical *Potamogeton capillaceus*, new to Virginia; and in the border of dry woods northwest of Whaleyville we got a strange new *Lespedeza* (PLATE 424), looking like *L. hirta*, but with the technical characters of *L. capitata*.

In June, 1904, Dr. R. M. Harper observed from the moving train "on the Seaboard Air Line, . . . seven miles below Petersburg, a colony (containing probably several hundred individuals) of *Sarracenia flava* . . . the plants seemed to be growing in a sort of meadow, just as I have seen them in North Carolina."¹ Since *Sar-*

¹ R. M. Harper: *Sarracenia flava in Virginia*, *Torrey*, iv. 123 (1904).

Sarracenia flava is an indicator of good things we hoped that this station would yield some novelties.

Computation showed that the area must be about a mile north of the Burgess railroad station; but the maps and our own exploration indicated no feasible approach except by walking up the track. Accordingly, when I felt that I was sufficiently toughened to undertake two miles of walking over railroad ties, we started for Burgess station. Shortly before reaching there we stopped at sight of a natural spring-fed pond with quaking sphagnous border, a very rare type of pond in southeastern Virginia. But there were conspicuous signs, "Private; keep out." These were a blight to our enthusiasm, but a comfortable old house crowned the slope to the south of the pond and we went there for permission. The colored attendant could give no authority for our botanizing; the owner had gone into Petersburg for the afternoon. There was nothing to do but assume a welcome! So, forgetting Harper's meadow, we waded and tumbled in the cold water until late afternoon, when it seemed the part of wisdom to go toward Burgess. The pond was covered with *Nuphar fluviale* (a considerable extension northward), *Brasenia Schreberi*, the first we had got on the Coastal Plain of Virginia, and a naturalized water lily with roseate petals, the European *Nymphaea alba* forma *rosea*, introduced, we later learned, only a few years ago as four or five rhizomes but now crowding everything else. *Potamogeton* presented a puzzle and *Juncus repens*, extending its long submersed branches far out from the margin, baffled us until we traced it back to fruiting plants near shore. The boggy margin had nothing absolutely new to us but it was a pleasure to extend the local ranges of such rare plants as *Agrostis elata*, *Xyris ambigua* and *X. torta* var. *macropoda* and *Solidago graminifolia* var. *polycephala*. At last, fearing the return of a ferocious owner, we proceeded south. The old Burgess millpond was filled, at least near its outlet, with the relatively gigantic *Anacharis densa*, which, north to New York, occasionally spreads from aquaria but rarely becomes naturalized; here it had full possession.

The railroad, with its high embankments and its culverts, has nearly ruined the *Sarracenia flava* area north of Burgess Station. Only a few dilapidated plants persist, though the peaty and springy slopes and depressions furnished new stations for such nice things as *Rhynchospora cymosa* var. *globularis*, *Rhexia mariana* var. *purpurea* (*R. Nashii* Small), and *Eupatorium leucolepis*. Near-by, in dry pine

woods, was our first station south of Cape Charles and the Williamsburg region for *Gnaphalium obtusifolium* var. *micradenium*; and near it was *Silphium compositum* var. *reniforme* (*S. reniforme* Raf.), which Small cites from "Blue Ridge, N. C. and Appalachian shale slopes, Va." Dr. Perry, in her study of the group, saw only one specimen from the state, that from Bath County¹ at the extreme western border. The plant is relatively abundant at our station at the inner margin of the Coastal Plain, 125 miles to the east of the old Virginian station. In a springy and boggy clearing, where everything was oversized, *Digitaria Ischaemum* looked quite unfamiliar. I can make it nothing but var. *mississippiensis*, which Hitchcock cites only from "Maryland, Tennessee and South Carolina."

Returning toward Petersburg to spend the night, we selected as an attractive temporary home "Century House," on the land of which our spring-fed pond of the afternoon was located. The owner, Mrs. Bowman, instead of reprimanding us for trespass, urged us to continue our exploration of the pond next morning. So convenient were the quarters she gave us, so kind and ready to help were Mrs. Bowman, her son, Robert, and the general man about the place, William, and the most agile of colored boys, Isaac, that we at once conceived "Century House" as the ideal center for the next season's work.

Near the head of Nottoway Swamp, about midway between Sedley and Courtland, the topographic sheet shows a large pond with three antler-like narrow bays. It is there entered as Darden Millpond but, so far as we could learn, that name is forgotten and the present name is Predler's Pond. Our unvarying experience had been, that millponds have no broad natural beaches and botanically are quite uninteresting, being recent man-made habitats with no native specialities. Consequently, when we came to the broken-down dam at the outlet and saw above it miles of broad beach carpeted with vegetation, we knew that unexpected things awaited us. The regular plants of damp peat, sand and clay formed a turf 50 to 100 feet broad, with tiny and diffuse rills seeping down to the pond. Such species, local in Virginia, as *Eragrostis hypnoides*, *Axonopus furcatus* and *Panicum agrostoides* abounded, but we were more interested in the extensive patches of *Paspalum dissectum* and the superabundant *Oldenlandia Boscii*, the latter occurring as prostrate, freely branching plants up to 4 or 5 dm. across! *Oldenlandia Boscii* had been new to Virginia when, a year

¹ Perry in RHODORA, xxxix. 295 (1937).

before, we found tiny plants on the alluvium at Courtland; and the previous Virginian voucher for *Paspalum dissectum* had been a solitary starved individual from the silt of the Nottoway at Cypress Bridge. Best of all, *Digitaria scrotina*, the first from the state, was here. The species was included by Hitchcock in the 7th edition of Gray's Manual from "s. Pa., Del., and southw."; but in his later Manual of the Grasses (1935) Hitchcock modified his statement of range to "Coastal Plain, North Carolina to Florida and Louisiana; Philadelphia (ballast); Cuba." By Predler's Pond it was an ingredient in the natural turf. The shore-line of Predler's Pond is two and a half miles long. In two hours we inspected one-tenth of that distance. *Paspalum dissectum* was seen only once, as we started from the outlet; *Digitaria scrotina*, likewise, was noted only a single time, at the point where we felt that we must turn back. Much smaller Winter Pond in Middlesex County, Massachusetts, still yields previously undetected rare species after a century of botanizing. One brief visit to one-tenth of the beach of Predler's Pond has not exhausted its possibilities; but, unfortunately, we may never see it in the condition of 1937. In June, 1938, the dam had been reconstructed and absolutely no beach was in sight!

Driving toward Courtland for a long-delayed lunch, we came into unspoiled (except for some chopping) wet pineland. *Carphophorus tomentosus* was here and, although we were all nearly starved and it was mid-afternoon, we had to stop for the beautiful simple-leaved *Coreopsis* which grew at the border of the wet woods and in the ditches. Clearly the same as the plant of southwestern Nansemond which I had earlier identified and reported as *C. gladiata*, it was here more abundant than at our first station. In the past, the name *C. gladiata* has been variously used. Now that Sherff has monographed the genus, it becomes perfectly clear that the Virginian plant is not that species. Its achenes are unique and I am forced to recognize it as a very definite new northern member (PLATE 533 and 534, FIGS. 1, 5 and 8) of a prevailingly more southern series. With this undescribed *Coreopsis* and a *Panicum* which is puzzling, there was a wonderful *Solidago*, which we had already found in low woods not far from the University of Richmond, a plant with large heads borne in slender one-sided wands which reach a length of 4 dm. or more, another species (PLATE 532, FIGS. 1-4) which seems never to have been described.

After the experience with Predler's Pond we tried many other

ponds, usually with no luck; but, detecting on the contour-sheet a pair of tiny blue landlocked spots called Cat Ponds, not far from Benns Church in Isle of Wight County, we proceeded there. Most such little blue spots on the map had led us to small inundated bits of gum-swamp or other uninteresting depressions. One of the Cat Ponds was of this type, but the other (the larger) was a joy—a shallow pond with open beach a few rods wide, a good replica of the famous Cape Cod ponds. The pond itself was full of Maidencane, *Panicum hemitomon*, which in 1936 had been “new to Virginia.” With it was very luxuriant *Sagittaria graminea*, the first we had ever met in eastern Virginia. The turfy beach had many of the regular pond-shore plants but there were enough others to keep us closely inspecting everything and watching for novelties until long after lunch-time. *Hypericum denticulatum* var. *ovalifolium* was here abundant and safe from destruction, its previously known small station northwest of Homeville being in constant danger from fire and clearing. *Ludwigia sphacrocarpa*, var. *jungens*, which had been known in Virginia only at the type station, Cape Henry, where Griscom and I got it in 1933, was abundant; and two of the sedges specially pleased us: *Eleocharis melanocarpa* and *E. tricostata*, neither of which had been seen by Svenson, in his recension of the genus,¹ based on all accessible herbaria, from between southern Georgia and New Jersey. Cat Pond, like Predler’s Pond, may repay other visits, at different seasons and in different years, and its owner, Mr. Hatfield, seems glad to have it weeded.

Planning to have a glimpse of Williamsburg and to dine there in the evening, we crossed the big James River bridge to the Peninsula of Virginia. This being the area which Grimes and his wife had so much explored and our time before dark being very limited, we could expect little of novelty. Suddenly, however, we were impressed by a tall plant with slender spikes in broad corymbs—*Verbena brasiliensis*, unrecorded from north of Wilmington, North Carolina. A bit of dry open woods gave us *Antennaria solitaria*, which the Grimes’s reported only with doubt, and *Galium uniflorum*, new to the Peninsula; and one of the tiny pond-holes yielded *Erianthus strictus*, which a few days earlier had been “new to Virginia,” and *Panicum spretum* and *Proserpinaca pectinata*, neither of them found by Grimes. In the twilight,

¹ See SVENSON, RHODORA, xxxiv. 219 (1932) for the latter; *ibid.* xxxix. 270 (1937) for the former.

near Yorktown, we added three more plants to the flora of the Peninsula: *Setaria magna*, *Lippia lanceolata* and *Diodia teres*, var. *hystericina*. If we had only started at the beginning, instead of the end of the day, the known flora of the Peninsula of Virginia would have been vastly increased.

The last day of the season in the field was only a brief one. Just outside Homeville the superb *Crotalaria spectabilis* Roth¹ was beginning to flower; and near our station for *Houstonia tenuifolia* and other species isolated in oak and hickory woods a very strange grass attracted us. Obviously somewhat transitional between *Paspalum* and *Panicum*, it belongs with the wholly anomalous *Paspalum bifidum* (Bertol.) Nash, heretofore unknown north of South Carolina. The Virginia plant differs, however, in several characters from the more southern extreme and constitutes a good isolated variety (PLATE 509).

Early spring in southern Virginia was phenomenally advanced in 1938. We had watched for some weeks the daily records from Norfolk of summer temperatures. Consequently, when we reached Century House, south of Petersburg, we were not surprised to find that, early in April (2-10) spring was already fully on. Woodlands were splendid with *Wisteria*, *Cercis*, *Pyrus* (§ *Malus*), *Crataegus*, *Cornus florida* and *Rhododendron* (§ *Azalea*) in full bloom. The earliest-flowering herbs (*Alopecurus carolinianus*, *Luzula bulbosa*, *Holosteum umbellatum*, *Cerastium viscosum*, *Cardamine hirsuta*, *Arabis virginica*, *Veronica persica*, etc.) were already scattering their seeds. Since Carroll Williams was unable to join us and Robert Bowman was regularly employed, we had asked Mrs. Bowman to secure a driver and helper for us. She had most wisely selected Meade Lewis, a young man all his life familiar with the woods, with the eye of a trained hunter and skill in driving such as one rarely meets. We soon had him closely watching the woods and thickets and he took keen delight when he was first to see something new to us, remarking: "It isn't fair! You two have nothing to do but watch the woods, but I have to keep on the road, avoid drunken drivers and do the botanizing." When we found tiny plants, like *Myosurus minimus* and *Plantago heterophylla*, growing in a field with *Poa Chapmaniana*, *Sagina decumbens*, and other dwarf species, all we had to do was to give a sample to Meade and ourselves start the hunt for something else, knowing that he would collect the needed series. *Buxbaumia aphylla*,

¹ See Larisey in this no., 361, pl. 508.

the essentially leafless moss with fruits only 2 or 3 mm. long, was his great joy; and, as we were hunting for it in the pinelands south of Zuni, we could hear his shout, "Here's more of that bed-bug moss. Gee! these are giants!"

The hot early spring with little rain, following a dry and essentially frostless winter, had made the bottomlands and big swamps quite accessible, whereas in 1937 they had been flooded; but the day before we arrived heavy rains had come and these continued interruptedly during the trip. Frosts were now frequent and three mornings ice formed on small pools. The vegetation, although slowed down, was, fortunately, not much injured; we could tramp in complete comfort, except for the rain; and a furnace-fire was maintained at the house, so that our ventilated presses were stacked upon the radiators, giving ideal drying conditions. Many species not represented in northern herbaria by good flowering material were collected and we soon became active at our old game of finding species new to Virginia.

Just as in April of the year before, neglected cotton-fields were carpeted with a dense growth of quickly maturing winter-annuals, now in anthesis or in fruit. In such transient habitats the dwarf *Ranunculus parviflorus* was fruiting, *Myosurus minimus* and *Plantago heterophylla* closely simulated one another, *Poa Chapmaniana* was expanding its slender panicles, *Arabis virginica* was fruiting (impressing us as neither an *Arabis* nor a *Cardamine*), and *Spergula arvensis* var. *sativa* (new to Virginia) was frequent. In one old field, where, a year earlier, some of these species abounded, they were now wanting and their place was taken by *Holosteum umbellatum* which we did not see the year before. The quick-growing weeds, however, were not confined to old cotton-fields. Stopping on the "soft-shoulder" of a road to investigate a leaking tire, we found ourselves in an abundance of *Teesdalia nudicaulis* (L.) R. Br., a European species, evidently included with the seed of European *Lolium perenne*, which was extensively planted along the new roadsides. Again, stopping in Wakefield to make an inquiry, we noticed that the annual *Cerastium* of the worn-out grassland was not the ubiquitous *C. viscosum*. In this case it was the European *C. tetrandrum* Curtis, heretofore not recorded as American.

The hoary-pubescent *Plantago virginica* was scarcely in flower; but, associated with it or exclusively occupying areas of dry sand or clay, there was a small and green *Plantago* in full flower or even in fruit.

This puzzled us, for we knew of no relative of *P. virginica* which it could be. In Part II I shall further discuss it (PLATE 530, FIGS. 4-6).

We stopped for a brief check of the sandy pine barrens of Isle of Wight County, not expecting additions, but for the joy of seeing *Pyxidanthra* in full flower and because the area is one of fascination and real individuality. *Carex pensylvanica* and *C. tonsa* abounded and, slightly southward (near Walters), there were carpets of *C. umbellata*. These would hardly stir the enthusiasm of a botanist of New England, Pennsylvania and New Jersey; but, singularly enough, all three make their debuts as members of the Virginian flora, Mackenzie (in N. Am. Flora) having seen none of them from the state!

The bottomlands, as already noted, were dry and quite accessible, carpeted with great flowering colonies of *Podophyllum*, fruiting ones of *Sanguinaria* and innumerable violets. On many of the richer bottoms *Senecio aureus* was in full bloom, amazing to a northerner, who has known the northern plant of swamps and peaty thickets, through its gigantic size and the *thick, elongating, purple basal offshoots*. The plant of these bottoms is true *S. aureus* of Linnaeus; perhaps the northern and transcontinental plant is wrongly identified with it. On the bottoms generally *Ranunculus abortivus*, pale-green and with characteristically cleft cauline leaves, abounds; but along the Nottoway and its tributary, Three Creek, it is chiefly represented by a plant with lustrous dark-green and quite undivided cauline leaves, a striking and apparently quite localized variety (PLATE 518) which will be further considered in Part II.

The patch of rich, deciduous woods slightly east of Emporia, near Metcalf Branch, had, in previous seasons, yielded good results. On the bottomland itself we had previously collected *Hydrangea arborescens* and fruiting specimens of a small tree which we took to be *Aesculus discolor* Pursh, then new to Virginia. In early April, 1938, the latter was freely flowering, both in the bottomland woods and higher up; its identity is now established. *Clematis ochroleuca* was flowering in the dry woods; *Coreopsis auriculata* was recognizable, though young; and, on the bottomland we got our only collection on the Coastal Plain of *Phacelia*, in this case the beautiful *P. dubia*, a plant chiefly of the interior. In May, 1935, Griscom and I had been much impressed by the exceedingly long peduncles of the staminate spikes which characterized *Carex digitalis* on Little Neck in Princess Anne County. In the rich woods east of Emporia the same plant

abounds and it has subsequently proved to be typical of such habitats on the Coastal Plain of Virginia, thence southward. It so far departs from true *C. digitalis* as to merit recognition as a southern variety (PLATE 511, FIGS. 3 and 4).

Slightly north of Emporia, in the rich woods along Three Creek, where *Saxifraga virginensis*, *Hystrix patula* and some other inland species reach the margin of the Coastal Plain, there is a rich development of *Viola*. Among the complex series we got the southern *V. esculenta* Ell., heretofore known in the state only from a single station in Norfolk County. Farther down Three Creek, near Drewryville, the violet-population contained the characteristic *V. Langloisii* Greene var. *pedatiloba* Brainerd, previously known only from Louisiana; and about spring-heads in rich woods slightly east of Drewryville the essentially northern, rather than southern, *Lycopodium lucidulum* hides under abundant clumps of *Dryopteris celsa* (Wm. Palmer) Small of the Great Dismal Swamp.

Rich loamy woods were evidently the habitat where the best botanizing was to be found in early spring; consequently, with the hope of finding on the Coastal Plain other stations for plants of the interior, we started for the rich slopes and gullies along the James near Claremont. On the way we were attracted by the lush vegetation on the bottomland of Powell's Creek, near Garysville. The inland *Sedum ternatum* here made extensive mats; and on the dry wooded slopes were other plants of the interior: *Stellaria pubera*, *Anemonella*, *Hepatica americana*, *Chrysogonum virginianum* and several others. Our best area, on this trip, however, was near Claremont. Here the fossiliferous sands and clays are near the surface and the banks of streams and the wooded gullies conspicuously display them. Calcareous springs and rills abound and the freely available "marl" and the friable soil support rich forests of *Ulmus fulva*, *Asimina triloba*, *Juglans cinerea*, *Fraxinus americana*, *Tilia heterophylla* and *Michauxii* and many other trees and shrubs hardly characteristic of the Coastal Plain. On the wooded slopes *Hydrangea arborescens* abounds and *Menispermum canadense* twines with *Vitis vulpina*. The herbaceous flora is as rich as one could ask, with *Orchis spectabilis*, *Aplectrum hyemale*, *Cimicifuga racemosa*, *Dentaria laciniata*, *Heuchera americana*, *Thaspium barbinode*, *Obolaria*, *Nemophila microcalyx* and *Antennaria solitaria*; and in one gully *Hybanthus concolor* forms almost a thicket, nearly a meter high!

The calcareous rills in the woods near the head of Sunken Meadow, slightly south of Claremont, are bordered by a tall and broad-leaved *Scirpus* which was quite strange to us. In early April it was coming into bloom; in mid-June, when we again collected it, it was shedding its achenes. Suggesting the Coastal Plain *S. divaricatus*, it is coarser, with axillary as well as terminal umbels and with distinctive spikelets, scales and fruits. It proves to be the very rare and little known *S. fontinalis*, described by Harper from calcareous wooded spring-heads in Georgia. Here, in a single but extensive calcareous area tributary to the James, it abounds with Alleghenian species which intrude into the Coastal Plain from the west. So far as known it has not been detected between Georgia and Virginia!

It was two months before Long and I could return to Virginia. Rain had poured down on the already drenched land and continued to do so during much of our field-work (June 8-19). Vegetation was luxuriant and all but the bottomland species were prospering. The latter were hopelessly submerged, though we did succeed in extracting from the flooded bottomlands of the Nottoway and the Meherrin fine flowering series of Acanthaceous herbs (*Justicia* and *Ruellia*); and on the bottomland of the Meherrin about Haley's Bridge there was another member of the family which is surely not in Gray's Manual. Its identity must await the collection of flowering or fruiting material. This special bottomland was the only one on which we could get much accomplished. In 1936 we had got, along with the endemic *Carex crus-corvi* var. *virginiana* Fernald (in RHODORA, xxxix. 393, pl. 476, figs. 1-5), a representative of *C. vulpinoidea* with blue-green (instead of yellow-green or golden) tones. It was important to get more; so, after a visit to Hart's Bridge in southern Southampton County, we swung over to Haley's Bridge. The water, in the late afternoon of June 16th, was low enough on the flood-plain for us to travel easily, although shrubs and herbs all bore a heavy crust of alluvial mud and silt. While collecting further material of the two *Carices* we were diverted by a strange flexuous and membranous-leaved *Scirpus*, trailing or reclining at the margins of the bottomland creeks. Its inflorescence suggested that of the common erect and densely cespitose *S. atrovirens* var. *georgianus* (Harper) Fernald, but the rhizome was elongated and it bore only a solitary culm from the crown formed the preceding year. So consistent was the plant in its elongating rhizomes, solitary weak and trailing culms and flaccid, smooth leaves that we

collected it until ominous thunder indicated the necessity to start for Emporia and supper.

Returning on the 18th for better material of the strange new *Scirpus* and to retrieve the specimens of *Carex crus-corvi* var. *virginiana* which, in our haste of two days before to get under cover, had been left behind, we started lower down, nearer the Bridge. *Carex caroliniana* Schwein., the first we had seen in Virginia, was overripe but recognizable, the culms reaching the phenomenal height of 1.65 meters. *Euphorbia obtusata*, in past years always scarce, was here abundant. The ditch along the road through the wooded bottomland had, to us, a strange appearance, from the ripe heads of *Serinia oppositifolia*, the first station known north of South Carolina. In the woods *Arisaema Dracontium*, the last plant one would look for on the Coastal Plain, was vigorously developed; and green rosettes were certainly those of *Spiranthes ovalis*, not yet in flower. In 1936¹ I showed that one of the commonest grapes of southeastern Virginia is *V. cinerea*, var. *floridana* Munson (*V. Simpsoni* Munson), although it had been supposed not to extend north of southern Georgia. Here, at Haley's Bridge, however, it is represented by the silvery-tomentulose typical *V. cinerea*, in the East not supposed to occur north of Florida. Reaching the *Scirpus* station we were chagrined to find it under four to six feet of water. That part of the bottomland was again not to be explored this trip (nor, as it proved, during the July trip).

Starting back to Emporia, with a feeling of partial defeat, we stopped at an extensive peaty clearing, to collect "anything else" before supper-time. And the anything else this time proved to be a slender branching *Polygala* with the habit of *P. verticillata* var. *ambigua*, but with the relatively showy milk-white racemes composed of much larger flowers, with wings 2–2.6 mm. long and much overtopping the capsules. Perfectly typical *P. verticillata* (*P. Pretzii* Pennell) grew near-by, as well as characteristic *P. verticillata*, var. *ambigua*, with every transition one could ask for, but the plant with larger white flowers was a stranger (PLATE 525, FIGS. 1 and 2). It proves to be an extreme of the species represented in the Gray Herbarium only from Missouri, Arkansas and Oklahoma—a geographic relationship now very familiar to us in eastern Virginia.

We had gone to Haley's Bridge via Hart's Bridge (south of Sunbeam) and Statesville, because in April we had seen in rich woods

¹ RHODORA, xxxviii. 426 (1936).

between Hart's Bridge and the North Carolina line young leaves of what we took to be *Sanicula Smallii*. The flowering and fruiting plants were very typical—a very definite species with subcoriaceous leaves and tuberous-thickened roots. At the border of sandy woods at Hart's Bridge I was attracted by a strange grass. It proves to be *Panicum chrysopsidifolium* Nash, which Hitchcock (Man.) indicates only from Texas, Arkansas, Louisiana and Florida; and near-by, stimulated by the perpetual irrigation and manuring of the weeks of freshet, *Crotalaria Purshii* was growing to a height of 4.5 dm.

But to begin at the beginning. Our first day's field-work in June had progressed only a few minutes, when, south of Petersburg, we were amazed to find *Juncus brachycarpus* abundant in almost any argillaceous swale. This very definite species, simulating the mid-summer and autumn *J. scirpoides* but with short and broad capsules and soft, instead of acerose, perianth-segments, has been considered one of the rarest of rushes on the Atlantic slope; but in June, in southeastern Virginia, it was seen everywhere we went and in July we found it (over-ripe) northward to the Gloucester Peninsula. It becomes highly probable that its reputation for rarity is due to its early maturing and later being mistaken for old and passé inflorescences of the common *J. scirpoides*. Barely three miles south of Petersburg, along the tracks of the Atlantic Coast Line, there are some wet argillaceous depressions which proved fascinating. The best find here was an almost black-headed *Eleocharis*, strange to us. In rhizome and habit it is *E. capitata* (*tenuis*) but the very dark and coarsely pebbled achenes with strongly depressed tubercles are a close match for those of *E. capitata* var. *verrucosa* Svenson, which its author had seen only from the Mississippi Basin.

Space does not permit recording all the thrilling (and disappointing) days. Visits to localities already known to be good yielded additional rarities: the swale north of Littleton, which is still our only station for *Polygala ramosa*, supplying *Acerates floridana*, apparently the first in the state, and a really definite new blackberry (*Rubus*) of the *cuneifolius* series, but with depressed habit, acuminate leaflets and many other distinctive characters (PLATES 521 and 522); the area north of Emporia, where, in 1936, Griscom, Long and I found *Schwalbea americana*, yielding our first station for the long-sought *Drosera brevifolia*; a similar but drier area of pine and oak woods at the boundary between Greenville and Sussex Counties supporting

Schwalbea in great abundance and a good colony of *Eryngium yuccifolium*; the margin of Somerton Creek with the tropical *Pontederia lanceolata* Nutt. forma *brasiliensis* (Solms) Fern.,¹ the first from north of Florida; and the springy thicket north of Factory Hill (type-locality of the slender *Coreopsis* noted above) with the first colony of *Erigeron vernus* known to us in Virginia except back of the dunes of Princess Anne County.

Other localities deserve fuller notes; I will restrict myself to four limited ones and a fifth of more generalized character. The white-sandy open pine and oak woods and barrens between Franklin and Smith's Ferry yielded in September, 1937, a remarkable group of novelties. In June such habitats are not likely to display much of distinctive character. However, stopping to look over the type station of the new *Chrysopsis* related to *C. gossypina*, we were impressed by the presence there of low thickets of *Comptonia*, the Sweet Fern, the first we had ever met on the Coastal Plain of Virginia. Always familiar with what in New England and eastern Canada we call *Comptonia* (or *Myrica*) *asplenifolia*, I was greatly impressed with the small and glabrous foliage, the non-pilose branchlets and the tiny fruiting aments of the shrub south of Franklin. Comparison in the herbarium shows that there are two strongly defined varieties in the species: one of wide range across southern Quebec and Ontario, thence south across the Maritime Provinces and the northern states and locally southward in the interior of the continent, a shrub with pilose or villous new branchlets, more or less pubescent foliage, large fruiting aments and other characters to be discussed in Part II (PLATE 514, FIGS. 7-10); the other a pine-barren shrub, the small extreme (PLATE 514, FIGS. 1-6) in southeastern Virginia, also in the pine barrens of New Jersey and Long Island. Linnaeus proposed two species for these shrubs: *Liquidambar peregrina*, "*Habitat in Canada*," obviously the common northern shrub; and *Myrica asplenifolia* "*in America septentrionali*," with numerous literary references. One was to Gronovius. In so far as the Clayton plants (Gronovius) were involved they were presumably both the varieties. Most happily, Clayton, recognizing the rarity in his region of the shrubs, specially noted the localities: "*In Comitatu Lancastriae crescit, & ad ripam saxosum praeruptum fluminis Northanna in opacis sub abietum tegmine initio Junii absque indiciis fructificationis reperi.*" Presumably

¹ See RHODORA, xxvii. 81 (1925).

Clayton's material from Lancaster County is like the Southampton County shrub; with equal probability his shrub from steep shaded slopes by North Anna River (well back in the Piedmont) is the wide-ranging one.

With the *Comptonia* and the *Chrysopsis*, *Stillingia sylvatica* was superabundant, its crowns producing several ascending branches with lustrous leaves and, in mid-June, tipped by the slenderly conical yellow-green inflorescences. Farther south, at our original Virginia station for *Tradescantia rosea* var. *graminea*, *Cirsium repandum*, the first known from Virginia, was blooming; and near a fine thicket of *Phaseolus polystachyus* there was a strange *Physalis*, with young flowering buds. Most of the area where the latter originally occurred is cleared and under unsuccessful cultivation (chief crop uninvited *Opuntia*), so that the *Physalis* is now very rare. Two fruiting plants collected in July show it to be *P. monticola* C. Mohr, heretofore supposed to occur only in the mountains of Alabama.

The small patch of rich deciduous woods by Metcalf Branch, east of Emporia, always yields something interesting; and in June we were humiliated to find that one of the most abundant trees there is *Acer floridanum* Pax. We had previously been so absorbed in the herbaceous vegetation that we had not noted the maple. Small, under *Saccharodendron floridanum*, gives the range: "Fla. to La. and S. C. Naturalized in N. C. Reported from Va." The report is that of Sargent (Man.) from Dinwiddie County. Surely *Acer floridanum* is indigenous east of Emporia and in its shade, besides local species already enumerated (p. 374), are *Silene virginica* (the only time we have seen it on the Coastal Plain in the state), *Carex flaccosperma* (plants either yellowish- or blue-green) and *Rosa carolina* var. *glandulosa* (Crépin) Farwell, which is certainly not common. Descending to the bottomland (the day we were there well dried out) of Metcalf Branch we were much impressed by the tall blue-green clumps of a *Glyceria*, with broad and flaccid horizontally divergent ribbon-leaves with long ligules and elongate panicles of reflexed branches, suggesting the panicle of *Milium effusum*. We were so impressed with this strange grass that we collected and carefully laid out nearly 20 sheets. It is fortunate that we did so, for it is very typical *G. arkansana* Fernald, described from Arkansas and Louisiana. Slightly to the east, on the slope of spring-fed woods, where *Carex Collinsii* (second station in the state) abounds, there are splendid trees of *Fraxinus biltmoreana*,

assigned by Small (Man.) to "Blue Ridge to Appalachian Plateau." The *Fraxinus* also occurs on the Coastal Plain in Dinwiddie County, at one of the first Coastal Plain stations for *Phlox carolina*, var. *triflora* (Michx.) Wherry.

Not far from Stony Creek in Sussex County there are rich woods, with a Piedmont flora. On this trip we got there *Woodsia obtusa* (the first station known to us on the Coastal Plain) and *Scrophularia lanceolata* Pursh, a trans-continental and northern type, which Pennell (Scroph. E. Temp. N. Am.) had seen only from the Blue Ridge and the Alleghenies in Virginia. The road from Stony Creek to Sussex Courthouse goes through much unspoiled and botanically productive country. The most distinctive feature, perhaps, is the great development of almost savannah-like swales in the open woods bordering the swamps of the Nottoway. One such swaley area was given over, in June, to a few species, making a solid swale of many acres: *Carex Barrattii* (not seen by Mackenzie from Virginia), *C. bullata* (do.), *C. Buxbaumii* (do.), *Panicum scabriusculum* and *P. consanguineum* and *Juncus Elliottii*. No plant with showy flowers was seen there in June. We are looking forward to possible novelties in August and September.

We invited Professors A. B. Massey of Blacksburg and Robert Smart of Richmond to join us for a week-end. Unfortunately Smart was under the weather (being too accustomed to it) at the time and Massey was crowded with routine work. We had his companionship for a too brief morning and, time being limited, we decided on trying the Waverly region, as the most accessible area of sandy pinelands. Long and I hardly expected novelties from an area much investigated, but, fortunately, we left the car at a new spot. The woods had, besides the familiar pineland types, a most definite *Sisyrinchium*, erect, with filiform leaves and a pair of spathes, *S. capillare* Bicknell, a Coastal Plain species not recorded from so far north; and the wet depression, now filled with water, was largely given over to *Rhynchospora perplexa* Britton, another species unrecorded from north of North Carolina.

Unfortunately Massey had to leave before lunch, in order to make Blacksburg before dark (foreseeing inevitable rain); so that we were obliged to continue the day without him. Being only a few miles south of Claremont and wishing to get mature material of the strange *Scirpus* (*S. fontinalis*) found in April we proceeded there; and on this

and two succeeding days we had all we could handle in the neighborhood of Claremont, where the highly fossiliferous sands and clays support as rich and luxuriant a vegetation as any on the Coastal Plain. The flora is, however, definitely not a typically Coastal Plain one; it is of the Blue Ridge and the Appalachian Upland, as we had already noted in April (p. 375). We collected in three areas in June: in the woods along upper waters of Sunken Meadow Creek (south of Claremont), in the gullies and back of the beach of the James at Claremont Wharf, and, a few miles down river, in similar habitats below Sunken Meadow Beach. All three areas were similar in physiognomy and very near together; yet each had its own specialties (and in July all other spots examined in the fossiliferous Miocene beds were similarly found to have marked individuality). All three areas had *Bromus purgans*, typical *Ostrya virginiana* (with glabrous twigs), *Laportea canadensis* (making botanizing most uncomfortable), *Menispermum canadense*, *Cryptotaenia canadensis* and *Sanicula gregaria*. Only in the woods at the head of Sunken Meadow Creek did we see *Scirpus fontinalis*, *Symplocarpus foetidus*, *Thalictrum revolutum*, *Euonymus atropurpureus*, *Thaspium barbinode*, *Collinsonia canadensis*, *Viburnum acerifolium*, *Eupatorium purpureum* (*E. trifoliatum*), *Silphium atropurpureum*, *Coreopsis auriculata* and *Heliopsis helianthoides*. A few miles to the north, at Claremont Wharf (on the James) we found our only station in the region for *Adiantum pedatum* (stipes up to 6.5 dm. high), though it is probably general in the region, *Athyrium thelypteroides* (fronds up to 1.25 m. high), *Brachyelytrum erectum*, *Elymus villosus*, typical (only forma *arkansanus* at the head of Sunken Meadow Creek), *Carex bromoides*, *Frankii* and *Grayii*, *Smilax pulverulenta*, *Quercus borealis* var. *maxima*, *Caltha palustris*, *Tilia heterophylla*, *Hybanthus concolor* (very abundant in the gully with *Dryopteris celsa*, *Athyrium thelypteroides*, *Scutellaria versicolor*, etc.), *Aralia racemosa* and *Teucrium canadense* var. *virginianum*. Down river a few miles, in similar habitats below Sunken Meadow Beach, other notable (for the Coastal Plain) species were localized: *Deschampsia flexuosa*, *Smilax hispida*, *Quercus montana*, *Arabis laevigata* (in great profusion and luxuriance), *Sedum ternatum*, *Physocarpus opulifolius*, *Staphylea trifolia*, *Hypericum prolificum* (in July found in great abundance in woods of Flowerdew Hundred, the shrubs there up to 2.5 m. high), *Fraxinus americana*, *Agastache nepetoides*, *Stachys Nuttallii*, *Conopholis americana*, and *Houstonia longi-*

folia. At both Claremont Wharf and Sunken Meadow Beach some specialties were found: *Dryopteris celsa* (rare at the latter, superabundant and up to 1.2 m. high in a gully and adjacent cypress swamp at the former locality), *Populus deltoides*, *Cimicifuga racemosa*, *Astragalus canadensis*, *Osmorhiza longistylis* var. *villicaulis* and *Scutellaria versicolor*. In July many of these species were seen still farther down the James, at Eastover. Surely this portion of the Coastal Plain is a tongue of the Appalachian Upland pushing far to the southeast. But at Sunken Meadow Beach one plant was found which, thus far, is known only from a single spot. It is a *Coreopsis*, related to the commonly cultivated *C. grandiflora* and *C. lanceolata* but differing in many striking characters. So far as I can make out it is an undescribed species (PLATE 535, FIGS. 1-9).

In the gullies and brook-valleys north and northwest of Surry the fossils are sometimes near the surface; consequently there is another localized series of species. The best of the areas we found was a gully, heavily wooded with beech, with the undergrowth principally *Dirca palustris*. This is the only place we had ever met *Dirca* in eastern Virginia; and neither of us had ever imagined such domination of a forest-floor by it, tree-like shrubs up to 3 m. high, with the larger trunks 7 cm. in diameter. Adding to the relatively boreal aspect was a fine colony of the very characteristic *Antennaria munda* Fernald in RHODORA, xxxviii. 229, plate 433 (1936). This species is characteristic from central Maine and southern Quebec to the region north of Lake Superior, south to Massachusetts, Connecticut, northeastern Pennsylvania, etc. Looking from it through the trunks of *Dirca* and *Fagus*, and noting our only colony of *Dennstaedtia punctilobula* at the border of the woods, one might think himself in western New England; but the thousands of plants of *Ponthieva racemosa* at the bases of the slopes would quickly bring him back to the South.

I have summarized some of the "high lights" of our Virginian work up to the summer trips of 1938. The discussion of problems arising from the latter most necessarily be postponed. They are still yielding abundant results, and on the July trip we were gratified to rediscover at least two species (*Burmannia biflora* and *Aeschynomene virginica*) unknown in the state since their discovery by Clayton. There is plenty to do; there are too few equipped to do it.

PART II. ENUMERATION OF SIGNIFICANT SPECIES

In the following enumeration the plan of former papers is followed, of listing stations for rare or local plants and of discussing novelties which have come to attention during the working-up of the Virginia collections. Some collections of previous years are included; while many species of the recent collections are not here noted, their exact identification awaiting further study. In general, no new species collected during the summer of 1938 are included, although records from the miscellaneous material from these trips are given whenever their inclusion has caused no appreciable delay in finishing the present paper.¹ Plants apparently new to the flora of Virginia are indicated by an asterisk (*). The field work in September, 1937 and in April and June, 1938 was made possible through a special grant from the MILTON FUND FOR RESEARCH of Harvard University; that carried on in the summer and autumn of 1938 through an anonymous gift from a generous friend to aid phytogeographic research. The plates are largely the work of DR. E. C. OGDEN or of HENRY G. FERNALD, the cost of the photography and the making of the blocks largely defrayed from a grant for research from the DIVISION OF BIOLOGY of Harvard University. The cost of printing the plates has most generously been met by my loyal companion on all the recent work in Virginia, MR. BAYARD LONG.

WOODSIA OBTUSA (Spreng.) Torr. SUSSEX COUNTY: rich wooded slope, 4 miles south of Stony Creek, *F. & L.*,² no. 8000. PRINCE GEORGE COUNTY: rich woods, Coggins Point, no. 8910. See p. 381.

Apparently the first records from the Coastal Plain of Virginia.

DRYOPTERIS CELSA (Wm. Palmer) Small. To the few stations recorded add SOUTHAMPTON COUNTY: about spring-heads in rich deciduous woods east of Drewryville, abundant, no. 8005. SURRY COUNTY: rich calcareous wooded gullies and adjacent cypress swamp, by James River, Claremont Wharf, thousands of plants with fronds up to 1.2 m. long, no. 8006; rich wooded gullies along James River, below Sunken Meadow Beach, no. 8007. See pp. 375, 382, 383.

¹ Additional stations for many of the rare plants recorded in this paper (*Dryopteris celsa*, *Paspalum dissectum*, *Erianthus strictus* and *brevibarbis*, *Rhynchospora perplexa*, *Ponthieva racemosa*, *Pyrus serotina*, *Dirca palustris*, *Oldenlandia Boscii*, etc.) but discovered too late for inclusion must await the publication of another article.

² The same abbreviations of collector's names are used as heretofore: *F. & G.* (*Fernald & Griscom*); *F. G. & L.* (*Fernald, Griscom & Long*); *F. L. & F.* (*Fernald, Long & Fogg*); *F. L. & S.* (*Fernald, Long & Smart*). The abbreviation *F. & L.* (*Fernald & Long*) for the collectors of most of the cited numbers will be omitted, as quite unnecessary.

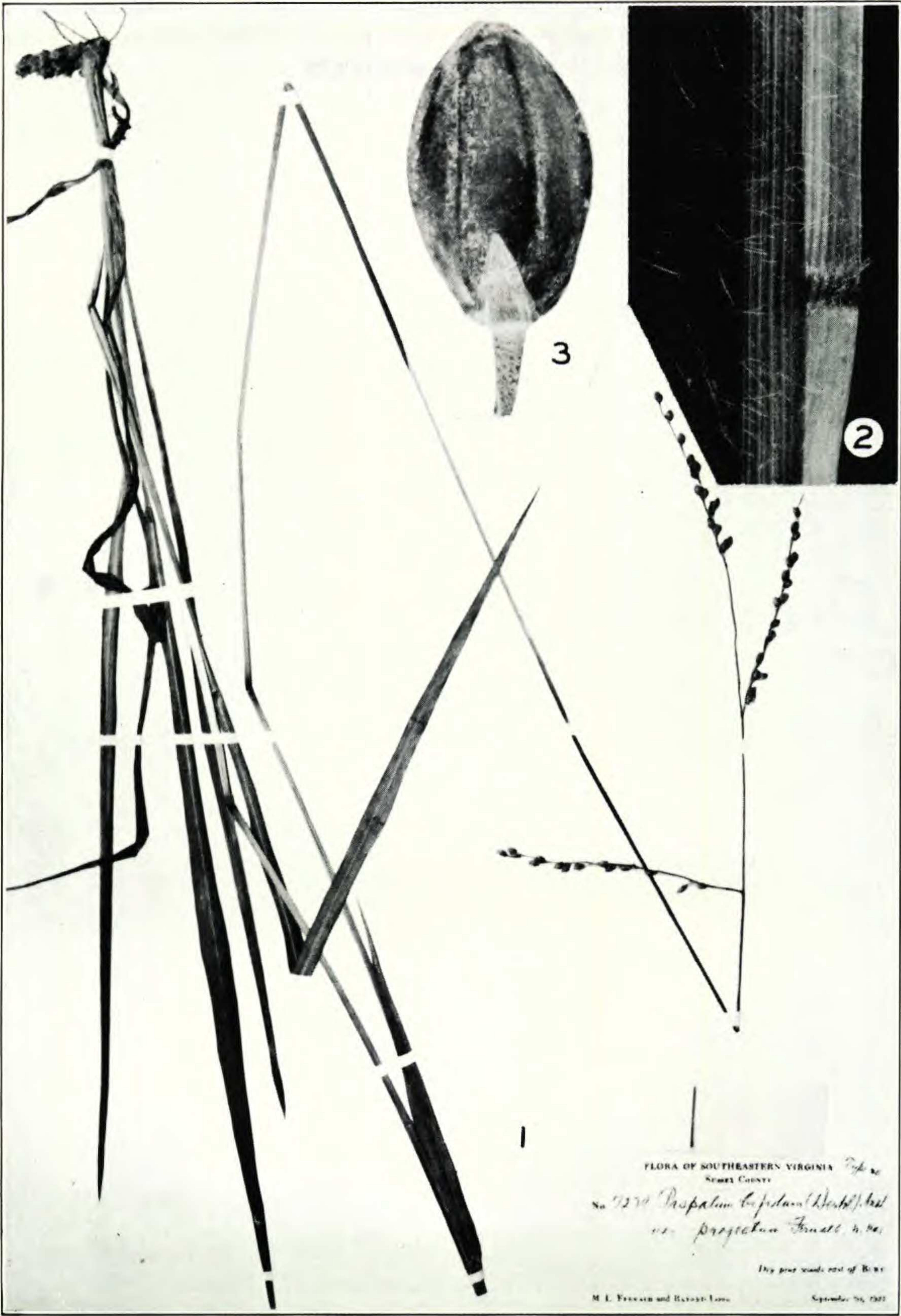


Photo. E. C. Ogden.

PASPALUM BIFIDUM, var. PROJECTUM: FIG. 1, plant, $\times \frac{2}{5}$, of TYPE-COLLECTION; FIG. 2, sheath, $\times 4$; FIG. 3, spikelet, showing 1st glume, $\times 10$.



Photo. E. C. Ogden.

BULBOSTYLIS CAPILLARIS: FIG. 1, TYPE of *Scirpus capillaris* L., $\times 1$ (courtesy of Mr. SPENCER SAVAGE); FIG. 2, base of type of *Stenophyllus capillaris*, var. *pycnostachys*, $\times 2$; FIG. 3, inflorescences of the latter, $\times 1$.

Var. CREBRA: FIG. 4, portion of type, $\times 1$; FIG. 5, base of TYPE, $\times 2$.

Var. ISOPODA: FIG. 6, inflorescences of TYPE, $\times 1$.

ATHYRIUM THELYPTEROIDES (Michx.) Desv. SURRY COUNTY: rich calcareous wooded gullies by James River, Claremont Wharf, thousands of plants forming a pure growth, with fronds up to 1.25 m. long, no. 8009. See p. 382.

Apparently the first record from the Coastal Plain of Virginia.

DENNSTAEDTIA PUNCTILOBULA (Michx.) Moore. SURRY COUNTY: beech woods, slopes of gully $1\frac{1}{2}$ miles north of Surry, no. 8001. See p. 383.

Rare on the Coastal Plain of Virginia.

ADIANTUM PEDATUM L. Occasional in rich woods.

The colonies in the rich gullies at Claremont Wharf have stipes of unusual height (up to 6.5 dm.). See p. 383.

EQUISETUM HYEMALE L., var. *AFFINE* (Engelm.) A. A. Eaton. Extended eastward from Surry County to NANSEMOND COUNTY: marshes along Western Branch, Everett's Bridge, no. 7186.

LYCOPodium LUCIDULUM Michx. SOUTHAMPTON COUNTY: rich woods about $2\frac{1}{2}$ miles east of Drewryville, no. 7746 (station discovered by our driver, *Meade Lewis*). See p. 375.

Very rare on the Coastal Plain; collected by Grimes near Williamsburg.

L. TRISTACHYUM Pursh. Extended south to SOUTHAMPTON COUNTY: dry sand, pine barrens about 7 miles south of Franklin, no. 7192.

POTAMOGETON CRISPUS L. SURRY COUNTY: brook in drained cypress swamp, Claremont Wharf, no. 7747.

**P. CAPILLACEUS* Poir. NANSEMOND COUNTY: sandy and peaty margin of Norfleet Pond, northwest of Whaleyville, no. 7198. See p. 367.

SAGITTARIA GRAMINEA Michx. ISLE OF WIGHT COUNTY: abundant and chiefly immersed in Cat Pond, south of Benns Church, no. 7200. See p. 371.

Not cited from Virginia by J. G. Smith, *Revis. N. Am. Sp. Sagittaria and Lophotocarpus* (1894); but recorded from the Potomac in the *Flora of the District of Columbia*.

**ANACHARIS Densa* (Planch.) Victorin. DINWIDDIE COUNTY: dominant in argillaceous margin of millpond, Burgess, no. 7203. See p. 368.

BROMUS PURGANS L. Extended eastward to SURRY COUNTY: rich calcareous woods at head of Sunken Meadow Creek, south of Claremont, no. 8030; seen eastward to below Sunken Meadow Beach. See p. 382.

**GLYCERIA ARKANSANA* Fernald. GREENSVILLE COUNTY: gum (*Nyssa aquatica*) swamp, bottomland of Metcalf Branch, east of Emporia, no. 8036. SURRY COUNTY: shallow water of gum swamp, Blackwater River, south of Savedge, no. 8037. Doubtless in other gum swamps. See p. 380.

Seemingly a very notable extension of range. The last epitome, Hitchcock's Manual, cites *Glyceria arkansana* only from Louisiana, Arkansas and Texas. The lemmas, membranaceous, minutely scabrous-puberulent and very prominently veined, may reach a length of 4.3 mm. The ribbon-like blue-green leaves are very striking in being horizontally divergent. The panicle-branches are soon reflexed, giving the inflorescence the aspect of that of *Milium effusum*. As a matter of fact *G. arkansana* is now represented in the Gray Herbarium from western New York (RHODORA, xxxv. 294) and a sheet from northwest of Glencoe, Illinois (June 12, 1911, Sherff) seems to be it.

POA CHAPMANIANA Scribn. SOUTHAMPTON COUNTY: weed in old cotton-field southwest of Franklin, no. 7750. GREENSVILLE COUNTY: similar habitat south of Emporia, no. 6941. See pp. 372, 373.

P. CUSPIDATA Nutt. Rich woods generally, eastward to SURRY COUNTY.

*ERAGROSTIS PEREGRINA Wieg. CAROLINE COUNTY: cinders of railroad ballast, Penola, no. 7207.

*DACTYLIS GLOMERATA L., var. CILIATA Peterm. SURRY COUNTY: roadside, Claremont Wharf, no. 8043.

The extreme of the variety, with the lemmas dorsally pilose.

ARUNDO DONAX L. SUSSEX COUNTY: a good colony, 3.5–4.5 m. high, in roadside-dump by a moist thicket, Wakefield, no. 7204.

MELICA MUTICA Walt. Frequent in rich woodlands eastward to Dinwiddie and Greenville Counties, more local to SURRY COUNTY (rich wooded slope at head of Sunken Meadow Creek, south of Claremont, no. 7755) and NANSEMOND COUNTY (wooded slope, Kilby, no. 6948).

TRIPLASIS PURPUREA (Walt.) Chapm. SOUTHAMPTON COUNTY: dry sand, pine barrens about 7 miles south of Franklin, no. 7210. See p. 366.

The species chiefly coastal with us.

ELYMUS VILLOSUS Muhl. SURRY COUNTY: rich calcareous wooded gullies by James River, Claremont Wharf, no. 8021; seen at Eastover. See p. 382.

E. VILLOSUS, forma ARKANSANUS (Scribn. & Ball) Fernald. SURRY COUNTY: rich calcareous woods at head of Sunken Meadow Creek, south of Claremont, no. 8022. See p. 382.

E. RIPARIUS Wieg. GREENSVILLE COUNTY: rich deciduous woods by Three Creek,¹ north of Emporia, no. 8023.

¹ Owing to the new trunk-line automobile-roads often departing from the old wagon-roads we mistook this station by Three Creek and many duplicates from there have been erroneously distributed as from Maclin's Creek, which is slightly more to the west.

HYSTRIX PATULA Moench. GREENSVILLE COUNTY: with the last, no. 8029. PRINCE GEORGE COUNTY: rich woods, Coggins Point, no. 8960. See p. 375.

DESCHAMPSIA FLEXUOSA (L.) Trin. SURRY COUNTY: rich wooded gullies along James River below Sunken Meadow Beach, no. 8049. See p. 382.

Our only station on the Coastal Plain of Virginia.

ALOPECURUS CAROLINIANUS Walt. Ditches, roadsides and old cotton-fields. SOUTHAMPTON COUNTY: Franklin, no. 7758; Haley's Bridge, no. 7759. GREENSVILLE COUNTY: south of Emporia, no. 6949. See p. 372.

MUHLENBERGIA CAPILLARIS (Lam.) Trin. SUSSEX COUNTY: dry hickory and oak woods near Burt, no. 7212.

BRACHYELYTRUM ERECTUM (Schreb.) Beauv. SURRY COUNTY: rich calcareous wooded gullies by James River, Claremont Wharf, no. 8052. See p. 382.

ARISTIDA DICHOTOMA Michx., var. *CURTISSII* Gray. CAROLINE COUNTY: roadside gravel south of Milford, no. 7214. SUSSEX COUNTY: roadside bordering dry hickory and oak woods near Burt, no. 7216. SOUTHAMPTON COUNTY: dry sand, pine barrens about 7 miles south of Franklin, no. 7215.

A. VIRGATA Trin. Extended inland to DINWIDDIE COUNTY (sphagnous bog about 1 mile northeast of Burgess, no. 7221) and SOUTHAMPTON COUNTY (pine barrens about 7 miles south of Franklin nos. 7218, 7219).

CTENIUM AROMATICUM (Walt.) Hitchc. SUSSEX COUNTY: sphagnous argillaceous boggy depression just northwest of Wakefield, no. 7224 (see p. 367). GREENSVILLE COUNTY: sphagnous bog about 1 mile northwest of Dahlia, no. 8550.

**DIGITARIA ISCHAEMUM* (Schreb.) Muhl., var. *MISSISSIPPIENSIS* (Gattinger) Fernald. DINWIDDIE COUNTY: wet peaty clearing about 1 mile northeast of Burgess, no. 7229. See p. 369.

Recorded by Hitchcock (Man.) only from Maryland, Tennessee and South Carolina.

**D. SEROTINA* (Walt.) Michx. SOUTHAMPTON COUNTY: wet siliceous and argillaceous drained border of Predler's Pond, Nottoway Swamp, southwest of Sedley, no. 7233. See p. 370.

The first from north of North Carolina, except old ballast-land collections from about Philadelphia.

PASPALUM DISSECTUM L. To the solitary station of a single individual previously reported add, also from SOUTHAMPTON COUNTY: wet siliceous and argillaceous drained border of Predler's Pond, Nottoway Swamp, southeast of Sedley, no. 7236; border of peaty pool in cypress-gum swamp, about 4 miles northeast of Capron, no. 7237. See p. 369.

**P. PRAECOX* Walt., var. *CURTISIANUM* (Steud.) Vasey (*P. lentiferum* Lam.). SUSSEX COUNTY: sphagnous siliceous boggy depression just northwest of Wakefield, no. 7241. See p. 367.

The first from north of North Carolina.

PASPALUM BIFIDUM* (Bertol.) Nash, var. **projectum, var. nov. (TAB. 509), planta 1–1.5 m. alta; culmo superne subnudo; foliis plerumque subbasilaribus, vaginis longe villosis; internodiis superioribus valde exsertis; racemis 2–3, inferioribus divergentibus vel divergenti-adscentibus valde interruptis, rhachi puberulente; spiculis 3–3.2 mm. longis; gluma inferiora 0.6–1.5 mm. longa vel obsoleta, gluma superiore fructum excedens.—VIRGINIA: dry pine woods east of Burt, Sussex County, September 20, 1937, *Fernald & Long*, no. 7239 (TYPE in Gray Herb., isotypes in Herb. Phil. Acad. and elsewhere). See p. 372.

The remarkable *Paspalum bifidum*, forming a transition between true *Paspalum* and *Panicum*, with its spikelets plump and several-ribbed and with some of the 1st glumes well developed as in *Panicum* but with the spikelets paired on the rachis and some of them without 1st glumes as in *Paspalum*, is, as expressed by Mrs. Chase, “nowhere common, on the Coastal Plain from [southern] South Carolina to Texas” (Chase, N. A. Sp. Pasp. 234). It is clearly an ancient type, now persisting as a relic. The plant of southeastern Virginia, isolated by 325 miles from the northeastern area of true *P. bifidum*, has all the anomalous characters of that species but departs in some points from all the more southern specimens (14 nos.) before me.

Typical *P. bifidum* may have the sheaths villous or rarely glabrous but in only one specimen (*Buckley* from Alabama) is the pubescence so extremely developed as in the Virginia plant. In true *P. bifidum* the upper node is strongly overtopped by the subtending leaf; in var. *projectum* it is 5–16 cm. above the tip of its subtending leaf. In true *P. bifidum* the uppermost blade is 2.5–18 cm. long, with the lowermost raceme borne from below it to only 2 (rarely 3) dm. above it; in var. *projectum* the uppermost blade is only 1–3 (rarely –7) cm. long, with the lowermost raceme 2.5–4.5 dm. above it. In true *P. bifidum* the 2–6 racemes are strongly ascending, often even appressed-suberect, and but slightly interrupted. In var. *projectum* the 2 or 3 racemes are much more interrupted and the lower divergently ascending or even strongly divergent, though in age quite as appressed as in the southern plant. In true *P. bifidum* the rachis of the raceme has scabrous angles, in var. *projectum* it is more universally puberu-

lent. The spikelet of *P. bifidum* is 3.3–barely 4 mm. long, that of the variety 4–4.2 mm. long. In *P. bifidum* the 1st glume, when developed, is broadly deltoid to rounded and only 0.3–0.6 mm. long; in the variety it is narrower and more elongate, 0.6–1.5 mm. long. In *P. bifidum* the fruit projects beyond the 2nd glume; in the variety it is covered.

Such a series of differences might seem to indicate specific separation but, although the aggregate of differential characters is striking, their stability is less so. It seems to me better to consider the plant of Virginia a geographic variety.

**PANICUM CHRYSOPSIDIFOLIUM* Nash. SOUTHAMPTON COUNTY: border of sandy woods, Hart's Bridge, no. 8080, very large (up to 8 dm. high) with larger panicles 9 cm. long; dry sandy open pine and oak woods, 6 to 7 miles south of Franklin, no. 8069, small plants (1.7–3 dm. high) with panicles only 2–3 cm. long. See p 378.

Not recorded by Hitchcock (Man.) from north of Florida but collected by Wiegand & Manning in North Carolina in June and July, 1927 (sandy roadside near swale, west of Wilmington, no. 216; sandy roadside bank, 8 miles south of Williamstown, Martin County, no. 215).

P. SPRETUM Schultes. YORK COUNTY: borders of small pond-holes in woods, northeast of Grafton, no. 7255. SURRY COUNTY: peaty depression in woods, east of Eastover, no. 8568. GREENSVILLE COUNTY: wet cut-over sphagnous pine and oak woods near mouth of Three Creek, north of Emporia, no. 8073; *Cephalanthus* swamp about 1 mile north of Skipper's, no. 8569. See p. 371.

The York County station important, since the species was not seen by Grimes.

P. WRIGHTIANUM Scribn. SOUTHAMPTON COUNTY: old cart-road in swampy woods and clearings southeast of Ivor, no. 7257; border of peaty pool in cypress-gum swamp, about 4 miles northeast of Capron, no. 7258.

P. COMMONSIANUM Ashe. SOUTHAMPTON COUNTY: dry sand, pine barrens about 7 miles south of Franklin, abundant and variable, nos. 7264–7268.

P. MUTABILE Scribn. & Smith. Additional station in SOUTHAMPTON COUNTY: moist peaty and sandy depressions in pine barrens, about 7 miles south of Franklin, no. 7277.

P. AMARUM Ell. A species of coastal sands extending up the James to SURRY COUNTY: sandy beach of James River, Claremont Wharf, nos. 8057, 8948.

P. AGROSTOIDES Spreng. The typical form (see RHODORA, xxxviii.

390) from SOUTHAMPTON COUNTY: wet siliceous and argillaceous drained border of Predler's Pond, Nottoway Swamp, southwest of Sedley, no. 7284. YORK COUNTY: borders of small pond-holes in woods, northwest of Grafton, no. 7285. See pp. 369, 371.

P. AGROSTOIDES, var. *CONDENSUM* (Nash) Fernald. YORK COUNTY: borders of small pond-holes in woods, northwest of Grafton, no. 7286.

P. RHIZOMATUM Hitchc. & Chase *P. anceps* var. Fernald. Inland, locally, to SOUTHAMPTON COUNTY (moist peaty and sandy depressions in pine barrens, about 7 miles south of Franklin, no. 7291) and SUSSEX COUNTY (swampy woods southeast of Waverly, no. 7292).

P. HIAN Ell. Add to stations in SOUTHAMPTON COUNTY: alluvial woods, bottomland of Meherrin River, near Haley's Bridge, no. 8054. GREENSVILLE COUNTY: clay-bottomed shallow pool near Fontaine Creek, west of Dahlia, no. 8578.

P. HEMITOMON Schultes. To the station reported in Sussex County add one in ISLE OF WIGHT COUNTY: sandy and peaty border of Cat Pond, south of Benns Church, nos. 7293, 8056. See p. 371.

SACCIOLEPIS STRIATA (L.) Nash. Inland to DINWIDDIE COUNTY: argillaceous border of millpond, Burgess, no. 7294.

SETARIA MAGNA Griseb. YORK COUNTY: along ditch, border of saltmarsh northwest of Yorktown, no. 7296. See p. 372.

Not recorded by Grimes.

**CENCHRUS INCERTUS* M. A. Curtis. NANSEMOND COUNTY: sandy field by Nansemond River, Suffolk, no. 7298. ISLE OF WIGHT COUNTY: dry sandy roadside at crossing of Southern Railroad, Lee's Mill, no. 6505. SOUTHAMPTON COUNTY: "soft shoulder" of road bordering bottomland of Blackwater River, southeast of Ivor, no. 6025.

An unfortunate extension northward into Virginia.

**ERIANTHUS STRICTUS* Baldw. SUSSEX COUNTY: depression in pinelands just southeast of Waverly, no. 7299; exsiccated argillaceous pineland about 2 miles east of Stony Creek, no. 8918. SOUTHAMPTON COUNTY: clearing at border of sandy woods, Terrapin Ridge, east of Drewryville, no. 8917. PRINCE GEORGE COUNTY: swampy clearing just southeast of Disputanta, no. 8581. YORK COUNTY: borders of small pond-holes in woods, northwest of Grafton, no. 7300. See p. 371.

Extension north from North Carolina.

E. COMPACTUS Nash. SUSSEX COUNTY: sphagnous argillaceous boggy depression just northwest of Wakefield, no. 7303. See p. 367.

Seems abundantly distinct from the common *E. giganteus*. We have seen it nowhere else in Virginia.

**E. BREVIBARBIS* Michx. SUSSEX COUNTY: peaty swale (cut-over cypress swamp), about 4 miles northwest of Homeville, no. 7301.

Apparently true *E. brevibarbis* is a very rare plant.

SORGHASTRUM ELLIOTII (Mohr) Nash. Inland to **SOUTHAMPTON COUNTY**: dry sand, pine barrens about 7 miles south of Franklin, no. 7312; and **SUSSEX COUNTY**: dry hickory and oak woods near Burt, no. 7314; north to **YORK COUNTY**: dry open woods northwest of Tabb's, no. 7313.

CYPERUS GLOBULOSUS Aubl. **SOUTHAMPTON COUNTY**: grassy roadside about 7 miles south of Franklin, no. 7324.

ELEOCHARIS ENGELMANNI Steud. **YORK COUNTY**: swale southeast of Tabb's, no. 8586. **SURRY COUNTY**: low wood-road north of Savedge, no. 8101; wet clearing west of Claremont, no. 8975. **GREENSVILLE COUNTY**: clay-bottomed pool by Fontaine Creek, west of Dahlia, no. 8585.

***E. MELANOCARPA** Torr. **ISLE OF WIGHT COUNTY**: sandy and peaty border of Cat Pond, south of Benns Church, nos. 7338, 8104, 8589. See p. 371.

First station between Georgia and New Jersey. See p. 371.

***E. TRICOSTATA** Torr. **ISLE OF WIGHT COUNTY**: sandy and peaty border of Cat Pond, south of Benns Church, nos. 7339, 8100 and 8102. **GLOUCESTER COUNTY**: sphagnum-carpeted pool in woods, south of White Marsh, no. 8590. See p. 371.

Not seen by Svenson (see p. 371) from between Georgia and New Jersey; but recorded by Weatherby and Griscom from eastern South Carolina (see **RHODORA**, xxxvi. 38).

***E. CAPITATA** (L.) R. Br., var. **VERRUCOSA** Svenson in **RHODORA**, xxxiv. 202 (1932). **DINWIDDIE COUNTY**: wet argillaceous depressions south of Petersburg, no. 8103. See p. 378.

Very notable occurrence. Svenson cites the variety as occurring from southern Indiana and Illinois to Arkansas and Oklahoma. A recent collection shows it to reach Louisiana.

***BULBOSTYLIS ciliatifolius** (Ell.), comb. nov. *Scirpus ciliatifolius* Ell. Sk. i. 82 (1816). *Isolepis ciliatifolius* (Ell.) Torr. in Ann. Lyc. N. Y. iii. 352 (1836). *Stenophyllus ciliatifolius* (Ell.) Mohr in Bull. Torr. Bot. Cl. xxiv. 22 (1897). **SOUTHAMPTON COUNTY**: dry sand, pine barrens about 7 miles south of Franklin, no. 7340; dry sandy old clearing, north of Smith's Ferry on the Nottoway River, no. 8591. See p. 366.

The conservation of *Bulbostylis* Kunth ? (1837) over *Stenophyllus* Raf. (1825) makes necessary this and other transfers.¹ *B. ciliatifolius* has not previously been known north of North Carolina.

¹ **BULBOSTYLIS stenophyllus** (Ell.), comb. nov. *Scirpus stenophyllus* Ell. Sk. Bot. S. C. and Ga. i. 83 (1816). *Dichroma caespitosa* Muhl. Gram. 14 (1817). *Stenophyllus caespitosus* (Muhl.) Raf. Neog. 4 (1825). *Isolepis stenophylla* (Ell.) Torr. in Ann.

As stated, *Bulbostylis* of somebody has been conserved in the International Rules of Botanical Nomenclature, as readjusted at Cambridge and thereafter (ed. 3: 132, no. 471 partim).

**Bulbostylis* Kunth. Enum. Pl. II. (1837) 205. [Nom. conserv.] *Stenophyllus* Raf. Neogen. (1825) 4. [Nom. rejic.]

The conservation is effected through the use of the asterisk, which is said to mean that a majority of the Committee appointed at Cambridge, of whom the present writer was (in this instance) in the minority, had voted for it. Now the least bit of bibliographic investigation will show that Kunth DID NOT properly publish *Bulbostylis* as a genus which he himself accepted. In his treatment of the genus *Isolepis*, he split that genus into four main divisions: "1) Species legitimaе" (p. 187); "2) Species parum anomalaе" (p. 202); "3) Species alienaе, genus proprium (BULBOSTYLEM) inter Isolepidem et Fimbristylem constituentes. Stylus tri-, rarissime bifidus, basi bulboso-incrassatis. Achenium basi styli persistente tuberculatum" (p. 205); and (p. 214) "Species a me haud visae, affinitate dubiae." The species under divisions 1 and 2 number 56, all called *Isolepis*. After the definition of division 3, the numbering of species goes straight on, from 57 to 82, and every specific name is preceded by the initial I (for *Isolepis*), like all which precede it. Although Kunth made the gesture of suggesting *Bulbostylis* (name already twice used in two separate families) as a genus, he did not have sufficient conviction to call the species under it by that name but left them unequivocally as *Isolepis*. Furthermore, even those who maintain that *Bulbostylis* Kunth (1837) is a properly published genus must admit that it was antedated by the really unequivocal *Stenophyllus* Rafinesque (1825). By Art. 60 of the International Rules *Bulbostylis* Kunth was illegitimate (it was also illegitimate under Art. 61, because it is a *later homonym* on two counts). Art. 60, in part, reads "A name is illegitimate in the following cases. (1) If it was superfluous when published, i.e. if there was a valid name

Lyc. N. Y. iii. 353 (1836). *Stenophyllus stenophyllus* Britton in Bull. Torr. Bot. Cl. xxi. 30 (1894).

B. coarctatus (Ell.), comb. nov. *Scirpus coarctatus* Ell. Sk. Bot. S. C. and Ga. i. 83 (1816). *Isolepis coarctata* (Ell.) Torr. in Ann. Lyc. N. Y. iii. 353 (1836). *Stenophyllus coarctatus* (Ell.) Britton in Small, Fl. Se. U. S. 189, 1327 (1903).

B. floridanus (Britton), comb. nov. *Stenophyllus floridanus* Britton in Nash in Bull. Torr. Bot. Cl. xxii. 161 (1895).

B. antillanus (Britton), comb. nov. *Stenophyllus antillanus* Britton in Bull. Torr. Bot. Cl. xliii. 447 (1916).

B. portoricensis (Britton), comb. nov. *Stenophyllus portoricensis* Britton in Torrey, xiii. 216 (1913).

B. nesioticus (I. M. Johnston), comb. nov. *Stenophyllus nesioticus* I. M. Johnston in Univ. Calif. Pub. Bot. vii. 438 (1922).

Not to be confused with *Bulbostylis nesiotis* (Hemsl.) C. B. Clarke.

for the group to which it was applied, with its particular circumscription, position and rank." Then follow illustrations. *Stenophyllus* Raf. (1825) consisted of the one species, *S. caespitosus* Raf., a renaming of *Scirpus stenophyllus* Elliott. Division 3 of Kunth's treatment of *Isolepis* (his *Bulbostylis*) also included *I. stenophylla*, based upon *Scirpus stenophyllus*. Kunth's name was, therefore, doubly (or trebly) illegitimate.

The situation is closely parallel to that of *Atropis* and *Puccinellia*, except that *Atropis* was neither a later homonym nor illegitimate for the reason that it contained a group already legitimately named.¹ Ruprecht, under *Poa*, had sectional or subgeneric names: "*Poa* (*Phippsia*) *algida* (R. Br.)," "*Poa* (*Catabrosa*) *airoides* Koel.," "*Poa* (*Atropis*) *distans* L.," etc.; and at the end of the treatment he said "*Atropis* Trin. (*P. distans*) *Catabrosae* quoad glumas proxima, spiculas habet (saltem in statu virgineo) lineares, fere teretes; in *Arctophila* nostra semper ex ovato-oblongae vel lanceolatae. E conditione glumarum generum series fortasse sequens: *Dupontia*, *Arctophila*, *Poa*, *Atropis*," etc. *Atropis*, AS A GENUS, was not properly published until taken up and actually used as a genus by Grisebach in 1853. In 1848 *Puccinellia* Parl. was legitimately published as a genus, including *P. distans*, which had been the basis of Ruprecht's provisional genus *Atropis*. Therefore, in the same list which conserves "*Bulbostylis* Kunth, Enum. Pl. II. (1837) 205," *Atropis* (a parallel case and definitely called a "nomen provisorium" which is illegitimate) is properly rejected and *Puccinellia* properly conserved. As a genus, unequivocally so treated, *Bulbostylis* was apparently first taken up by C. B. Clarke (in Hook. f. Fl. Brit. Ind.) in 1893. In the meantime *Stenophyllus* Raf., properly published in 1825, had been revived and correctly used by Britton in 1891. By a singular reversal of logic, in the list which properly conserves *Puccinellia* over *Atropis*, the name of the doubtfully published genus, *Bulbostylis*, dated incorrectly from Kunth's questionable publication in 1837, instead of from Clarke's (or some other) definite one, is conserved, in spite of its treble illegitimacy, over the adequately published and wholly legitimate *Stenophyllus* Raf. (1825). This, of course, was done because the name *Bulbostylis* had been more generally used than had *Stenophyllus*, a perfectly valid reason; the trouble is the bibliographic

¹ For discussions of the situation see Fernald & Weatherby in *RHODORA*, xviii. 1, 2 (1916) and Fernald, *ibid.*, xxviii. 150, 151 (1926).

one. Since it is requisite to good sportsmanship as well as statesmanship for the minority to accept the decision of the majority, I take up *Bulbostylis*, although I am still undecided about its authorship (perhaps those who urged its conservation can clarify that point). In taking up *Bulbostylis* I endeavor not to tuck the tip of my tongue into my cheek nor smilingly to remember the "Guiding Principle" of botanical nomenclature (Chap. I, Art. 3): "The rules of nomenclature should be simple and founded on considerations sufficiently clear and forcible for everyone to comprehend and be disposed to accept." The original Article 3 stated also that they "should neither be arbitrary nor imposed by authority." In some way this clause got lost in the rewriting.

THE VARIETIES OF *BULBOSTYLIS CAPILLARIS* (PLATE 510). The commonest and most wide-spread species in eastern North America is *Bulbostylis capillaris*, based upon *Scirpus capillaris* L. Sp. Pl. i. 49 (1753). This much is clear; otherwise the history of the name and the taxonomic and geographic limits of *B. capillaris* are perplexingly vague. The name is used in most parts of the warm regions of the world for something; until the whole group is intelligently and cautiously studied the specific limits can hardly be stated. The present study is restricted to the variable plant of temperate eastern North America.

Scirpus capillaris L. was itself a confused concept. It was published with an original diagnosis, based upon a specimen in Linnaeus's own herbarium, and quotations from his Hortus Cliffortianus and Flora Zeylanica, as well as others from Plukenet and Burman, with "*Habitat in Virginia, Aethiopia, Zeylona*," a sufficiently cosmopolitan range. I am quite unfitted to place all the elements myself. The plant of Ceylon, as shown by Burman's figure, cited by Linnaeus, has nothing to do with the plants of Virginia and of Ethiopia; it is, according to Sir Joseph Hooker in Trim. Fl. Ceylon, v. 66 (1900) *B. barbata* (R. Br.) C. B. Clarke (wrongly ascribed to Kunth). The Ethiopian plant, *Gramen junceum perpusillum; capillaceis foliis, aethiopicum* of Plunkenet, as shown by his plate, is certainly not a *Bulbostylis*. Without fuller knowledge of the plant actually before Linnaeus when he published his Hortus Cliffortianus it is not possible to say just what Linnaeus then had, but his plant (or plants) came from Jamaica and he cited the Ethiopian plant of Plukenet and a plate of Sloane's which represents some species of *Bulbostylis* but

not the plant of Virginia. The latter, which alone was in the Linnean herbarium when *Species Plantarum* was being prepared, is a well-preserved specimen and must stand as the TYPE of *Scirpus capillaris*. The photograph of it, most generously supplied me by Mr. Savage, shows it to be the extreme of our North American species which I described as *Stenophyllus capillaris* var. *pynostachys* Fernald in RHODORA, xix. 154 (1917). Two other varieties of the species occur in the eastern United States. It is presumable that in the specific synonymy names for them might be found; as varieties they do not require names which were given as binomials and, in view of the very confused condition of the genus, it is wiser to assign unequivocal names and types to all three. As I see *Bulbostylis capillaris* it consists of

BULBOSTYLIS CAPILLARIS (L.) C. B. Clarke¹ in Hook. f. Fl. Brit. Ind. vi. 652 (1893), as to type only, the name erroneously ascribed to Kunth. *Scirpus capillaris* L. Sp. Pl. i. 49 (1753), as to new diagnosis and type-specimen in Herb. Linn. (our FIG. 1). *Isolepis capillaris* (L.) R. & S., Syst. ii. 118 (1817). *Fimbristylis capillaris* (L.) Gray, Man. 530 (1848). *Stenophyllus capillaris* (L.) Britton in Bull. Torr Bot. Cl. xxi. 30 (1894). *S. capillaris*, var. *pynostachys* Fernald in RHODORA xix. 154 (1917).—Plant bearing crowded sessile spikelets at the bases of the leaves; spikelets of the terminal umbel rather crowded, 3–10 mm. long, longer than their pedicels.—Southern Maine to Minnesota, south to Virginia and Missouri. FIG. 1, TYPE of *B. capillaris*, $\times 1$; FIG. 2, base from TYPE of var. *pynostachys*, $\times 2$; FIG. 3, inflorescences of the latter, $\times 1$.

Var. **crebra**, var. nov. (TAB. 510, FIG. 4 et 5), spiculis basilaribus sessilibus nullis; umbellae spiculis lateralibus 2.5–6 mm. longis breviter pedicellatis, pedicellis inaequalibus 0.1–1 cm. longis.—Maine to Nebraska, south to Georgia, Tennessee, Oklahoma and Texas. TYPE: Muddy Pond, Stony Brook Reservation, MASSACHUSETTS, August 22, 1912, G. G. Kennedy (Herb. Gray). FIG. 4, portion of TYPE, $\times 1$; FIG. 5, portion of base $\times 2$.

*Var. **isopoda**, var. nov. (TAB. 510, FIG. 6), spiculis basilaribus sessilibus nullis; umbellae spiculis subaequaliter pedicellatis 2.5–9 mm. longis, pedicellis plerumque 0.6–3 cm. longis.—Maryland to southern Illinois, south to Georgia, Alabama, Arkansas and Texas.

¹ Index Kewensis assigns the specific combination to Nees in Mart. Fl. Bras. ii¹. 84, in obs. Reference to the treatment of Nees (1842) shows that, describing a new species under the generic name *Oncostylis* he compared it with "*Bulbostylis capillaris*" (name undefined and its source not given). Nees was using the generic name *Oncostylis* and he loosely cited herbarium-names ("*Bulbostylis paradoxa* N. ab E. in Herb. Caes. Vindob. n. 89," "*Bulbostylis tenuifolius* N. ab E. in Herb. Caes. Vindob.", etc.) as synonyms. Such names, of course, have no status in nomenclature. Nees was not taking up *Bulbostylis* as a genus; he gave the case away (p. 85) by correctly citing "*Isolepis (Bulbostylis) Langsdorffii* Kunth. En. II. 214."

TYPE: wet sand of dune-hollows, south of False Cape, Princess Anne County, VIRGINIA, *Fernald & Long*, no. 3737 (in Herb. Gray). FIG. 6, inflorescences of the type, $\times 1$.

**SCIRPUS FONTINALIS* Harper. SURRY COUNTY: calcareous meadow near head of Sunken Meadow Creek, south of Claremont, no. 7761; abundant along rills in rich calcareous woods at head of Sunken Meadow Creek, south of Claremont, no. 8108. Beginning to flower in early April; fruit dropping in early June. See pp. 376, 381, 382.

A remarkable range-extension but one of a type now becoming familiar. The very distinct and almost showy *Scirpus fontinalis* was discovered by Harper about a reputedly calcareous spring-fed shaded pool in Sumter County, Georgia. It has apparently not been known outside of Georgia. The Virginia area is in the calcareous fossil belt of Surry County, an extensive colony, the plant abundant all along the woodland rills and persisting by their margins on the cleared meadows.

SCIRPUS ATROVIRENS* Muhl., var. **flaccidifolius, var. nov., planta flaccida reclinata vel valde arcuata; rhizomate elongato; culmo solitario arcuato vel reclinato; foliis submembranaceis flaccidis translucentibus basi membranaceis planis; paniculis umbelliformibus laxis; spiculis ovoideis 3–4 mm. longis; perianthii setis achaeniis subaequantibus.—Southampton County, VIRGINIA: wooded alluvial bottomland of Meherrin River, near Haley's Bridge, June 16, 1938, *Fernald & Long*, no. 8109 (TYPE in Herb. Gray; ISOTYPE in Herb. Phil. Acad.). See p. 376.

Scirpus atrovirens, in its typical form, and var. *georgianus* (Harper) Fernald (*S. georgianus* Harper) both grow as erect stools with usually several stiff culms. Typical *S. atrovirens* has the leaves firm and opaque, the sheaths of the lower superficially nodulose-septate, the ovoid to cylindric spikelets 3.5–8 mm. long, the achenes overtopped by the perianth. In var. *georgianus* the firm and opaque leaves have smooth (not superficially nodulose) sheaths, the spikelets are 2–4 mm. long and the perianth is wanting or very short. Var. *flaccidifolius* differs from them both in its non-cespitose habit, weak culm, and membranous and translucent leaves. It has the lower sheaths smooth, as in var. *georgianus*, the spikelets broader than in most material of either that or typical *S. atrovirens*, and the long perianth of the latter.

THE TYPE OF *FUIRENA SQUARROSA*.—Two species of *Fuirena* occur in the northeastern United States—from Virginia northward. They are readily separated as follows:

No. 1. Annual, tufted, with culms 0.5–4.5 dm. high, often depressed; olivaceous scales of spikelets delicately nerved, with strongly curving awns; perianth-scales narrowly to broadly oblong or ovate, attenuate to a long retrorsely barbed awn; barbed bristles usually exceeding the yellow-brown achene, which is equaled by the persistent style. *F. pumila* Torr.; *F. squarrosa* of recent American authors.—Bogs and wet peaty or sandy shores, Florida to Massachusetts; southern Michigan and northwestern Indiana.

No. 2. Perennial, with thick rhizome; culms 0.25–1 m. high, erect; scales of spikelet with coarsely corrugated center and straight or but slightly curving awns; perianth-scales rhombic or deltoid-ovate, blunt or with a short thick smooth terminal subulus, the interposed mostly barless bristles shorter than the yellow achene, which is twice as long as the persistent style. *F. hispida* Ell.—Wet sandy places, Florida to Texas, north to New Jersey, Kentucky and Oklahoma; also West Indies.

By the earlier American botanists the two were not generally specifically separated or were considered varieties of one specific type which, naturally, took the earliest name, *F. squarrosa* Michx. Fl. Bor.-Am. i. 37 (1803); but they are now generally recognized as quite definite species. Unfortunately, when, in recent years, the two were set apart as species insufficient care was taken in determining to which Michaux's name applied. In his *Revision of the United States Species of the Genus Fuirena*, Bull. Torr. Bot. Cl. xvii. 1–8 (1890), Coville was misled by assuming that Michaux's type is at Kew, rather than in Paris. Coville said:

“By the kindness of Mr. C. B. Clarke of the Royal Herbarium at Kew, I have been able to ascertain that this [our no. 1] is the typical form of Michaux's *F. squarrosa*. He writes ‘Our original specimen of Michaux named *squarrosa* is the slender plant 6 to 8 inches high with fibrous roots, in short = *simplex* Vahl. var. *pumila* sp. Spreng.’ ” (Coville, p. 6).

Unhappily, however, the types of Michaux's *Flora Boreali-Americana* can hardly be assumed to be at Kew. They are generally known to be in Paris. Michaux's plant from Georgia and Carolina had the technical characters of our no. 2 and was so described by him: “paleis pistillinis petiolata-spathulatis, muticis; interjectis totidem setulis brevibus,” characters which keep it out of our no. 1. Incidentally Coville, citing the specimens examined by him, enumerated none of our no. 1, which he took for true *F. squarrosa*, from Georgia and South Carolina, but our no. 2, *F. hispida* Ell., with the technical characters of Michaux's diagnosis of *F. squarrosa*, was cited from both Georgia and South Carolina. Fortunately, the beautiful photograph of the material in the Michaux Herbarium at the Muséum National d'Histoire Naturelle, kindly sent to me by Professor Humbert and M.

Metman, beautifully displays our no. 2, so that there is no reason longer to perpetuate the error which arose when Clarke inferred that a specimen at Kew is typical. *F. hispida* Ell. (1821) must go into the synonymy of *F. squarrosa* Michx. (1803).

The smaller annual species (our no. 1), which has erroneously passed as *F. squarrosa* is *F. pumila* Torr. ex Spreng. Syst. i. 237 (1825). Torrey in 1826, without referring to Sprengel's publication of his *F. pumila*, treated *F. squarrosa* as the tall plant of the South, the smaller being called by him *F. squarrosa*, β *pumila*, Compend. Fl. N. Mid. St. 46 (1826).

As to the name "*simplex* Vahl. var. *pumila* sp. Spreng.," apparently coined by Clarke in the hope of clarifying the situation, it is apparently a new combination, but made without proper bibliographic citations.

RHYNCHOSPORA WRIGHTIANA Boeckel. DINWIDDIE COUNTY: wet peaty clearing about 1 mile northeast of Burgess, no. 7355. SOUTHAMPTON COUNTY: peaty and argillaceous clearing in pineland east of Courtland, no. 8119. PRINCE GEORGE COUNTY: wet pineland south of Petersburg, no. 8602. ISLE OF WIGHT COUNTY: sphagnous border of Cat Pond, south of Benns Church, no. 8118.

R. cymosa Ell., var. *globularis* Chapm. Frequent inland to DINWIDDIE and GREENSVILLE COUNTIES.

R. harveyi W. Boott. DINWIDDIE COUNTY: sphagnous border of spring-fed pond at Century House, northeast of Burgess, no. 8116; pineland at west side of Wilcox Lake, Petersburg, no. 8596. SUSSEX COUNTY: peaty swale and open wooded swamp $3\frac{1}{2}$ to 4 miles northeast of Homeville, no. 8111; peaty and argillaceous swale north of Littleton, nos. 8112, 8113.

Readily distinguished from the common *R. cymosa* by the acute flange at the base of the tubercle. In habit similar to, but the inflorescence more flexuous and without the prominent, stiff involucre of, *R. cymosa*. Presumably overlooked because of its early maturing. The single small collection made in Prince George County in 1936 was in mature fruit on June 19, and later in the summer we did not find it. Our collections of 1938 were fully mature as early as June 8.

R. fascicularis (Michx.) Vahl. GREENSVILLE COUNTY; depressions in dry open sandy pine and oak thickets near the Sussex County line, north of Emporia, no. 8114.

Previous Virginian records only from Princess Anne County.

**R. perplexa* Britton. DINWIDDIE COUNTY: wet argillaceous depression south of Petersburg, no. 8603. SUSSEX COUNTY: wet

peaty depression in pineland 3 to 4 miles northwest of Waverly, no. 8115. See p. 381.

First from north of North Carolina. The Waverly station, a small depression, on June 12, 1938, full of water, is one with many localized species. *Rhynchospora perplexa*, fully mature and with ripe achenes dropping on that date, superficially resembles *R. Torreyana*, with which it grows and which was hardly in anthesis. Its inflorescence is fuller and darker, the small castaneous spikelets sessile or subsessile in small fascicles and the achenes smaller and broader. It has presumably been overlooked because of its early maturing.

SCLERIA OLIGANTHA Michx. SUSSEX COUNTY: border of wooded bottomland of Nottoway River, east of Stony Creek, no. 8123. GREENSVILLE COUNTY: rich deciduous woods by Metcalf Branch, east of Emporia, no. 8124; and noted at other stations. Presumably overlooked because of its early maturing.

CAREX VULPINOIDEA Michx.

The plants on the wooded bottomland of the Meherrin River, near Haley's Bridge, are of a dark blue-green color, rather than the usual yellow-green; but they seem to show no morphological differences. See p. 376.

C. BROMOIDES Schkuhr. SURRY COUNTY: by brook in drained cypress swamp, Claremont Wharf, nos. 7762, 7763. See p. 382.

Not seen elsewhere by us on the Coastal Plain. No. 7763, growing in loose litter, shows the rhizome somewhat elongate, an unusual tendency in the species.

**C. PENNSYLVANICA* Lam. ISLE OF WIGHT COUNTY: sandy pine barrens, south of Zuni, no. 7773. See p. 374.

Not seen by Mackenzie (N. Am. Fl.) from the state.

**C. UMBELLATA* Schkuhr (*C. abdita* Bickn.). BRUNSWICK COUNTY: rich wooded slope by Meherrin River, 8 miles southeast of Cochran, no. 6953. SUSSEX COUNTY: rich wooded slope, 4 miles south of Stony Creek, no. 6952. ISLE OF WIGHT COUNTY: dry sandy yellow pine and oak woods near Walters, no. 7775. See p. 374.

Not seen by Mackenzie (N. Am. Fl.) from south of the District of Columbia.

**C. TONSA* (Fern.) Bicknell. ISLE OF WIGHT COUNTY: sandy pine barrens, south of Zuni, no. 7774. SOUTHAMPTON COUNTY: open sandy woods and thickets, Cypress Bridge, no. 6951. See p. 374.

Not seen by Mackenzie (N. Am. Fl.) from south of the District of Columbia.

CAREX DIGITALIS* Willd., var. **macropoda, var. nov. (TAB. 511, FIG. 3 et 4), planta dense cespitosa, culmis foliisque suberectis 3–6 dm. altis; spicis masculis longe pedunculatis pedunculis plerumque 0.5–2 dm. longis; spicis foemineis longe pedunculatis pedunculis imis 4–10 cm. longis.—Maryland and southern Indiana, south to North Carolina and Louisiana. MARYLAND: damp rocky woods along the Potomac, southeast of Great Falls, June 11, 1904, *Agnes Chase*, no. 2301. VIRGINIA: Richmond, May 9, 1894, *J. R. Churchill*; rich woods, Great Neck, Princess Anne County, May 5, 1935, *Fernald & Griscom*, no. 4332, noted as having “exceptionally long staminate peduncles”; dry rich woods near Metcalf Branch, east of Emporia, April 8, 1938, *Fernald & Long*, no. 7767 (TYPE in Gray Herb., ISOTYPE in Herb. Phil. Acad.); dry wooded slopes by Three Creek, Drewryville, April 9, 1938, *Fernald & Long*, no. 7768; rich wooded slope near Applewhite Church, Southampton County, April 9, 1938, *Fernald & Long*, no. 7769; rich deciduous woods northeast of Statesville, Southampton County, June 16, 1938, *Fernald & Long*, no. 8147; rich wooded slope, South Quay, Nansemond County, June 19, 1938, *Fernald & Long*, no. 8148. NORTH CAROLINA: Wilmington, *M. A. Curtis*. INDIANA: wooded slope about 5 miles southeast of Englis, Crawford County, June 9, 1919, *Deam*, no. 27,837; wooded slope of the Van Buren Ridge, about 8 miles southeast of Cannelton, Perry County, April 24, 1919, *Deam*, no. 27,119. LOUISIANA: dry woods, April, —, Red River, *Hale*.

Var. *macropoda*, noted by Griscom and me (see p. 374), when we first found it in 1935, on account of its very long staminate peduncles, is the only variation of *Carex digitalis* known to us from the Coastal Plain of Virginia, although it doubtless overlaps into the Piedmont area of the state. Its occurrence at Wilmington, North Carolina, in Louisiana and in the lower Ohio drainage in southern Indiana suggests that it is an austro-riparian extreme, which will be found in other southeastern states. Typical wide-spread *C. digitalis* (FIGS. 1 and 2) is usually low, with loosely spreading or arching culms (0.5–5 dm. high), the staminate spike approximate to the upper pistillate spike or to the uppermost bract or on a peduncle rising 0.2–3(–4.5) cm. above the bract or pistillate spike, the inflorescence frequently overtopped by the leafy median bract. Its pistillate spikes are short- to long-stalked, the uppermost even subsessile, but the lower peduncles are rarely so long as in var. *macropoda*. Var. *macropoda* is at once distinguished by its strongly erect habit, the heavy almost coralline-branched cespitose base, the long peduncles and the relatively short bracts, the staminate spikes rising high beyond them.

The name *Carex digitalis*, forma *podostachys* (Steud.) Kükenthal in

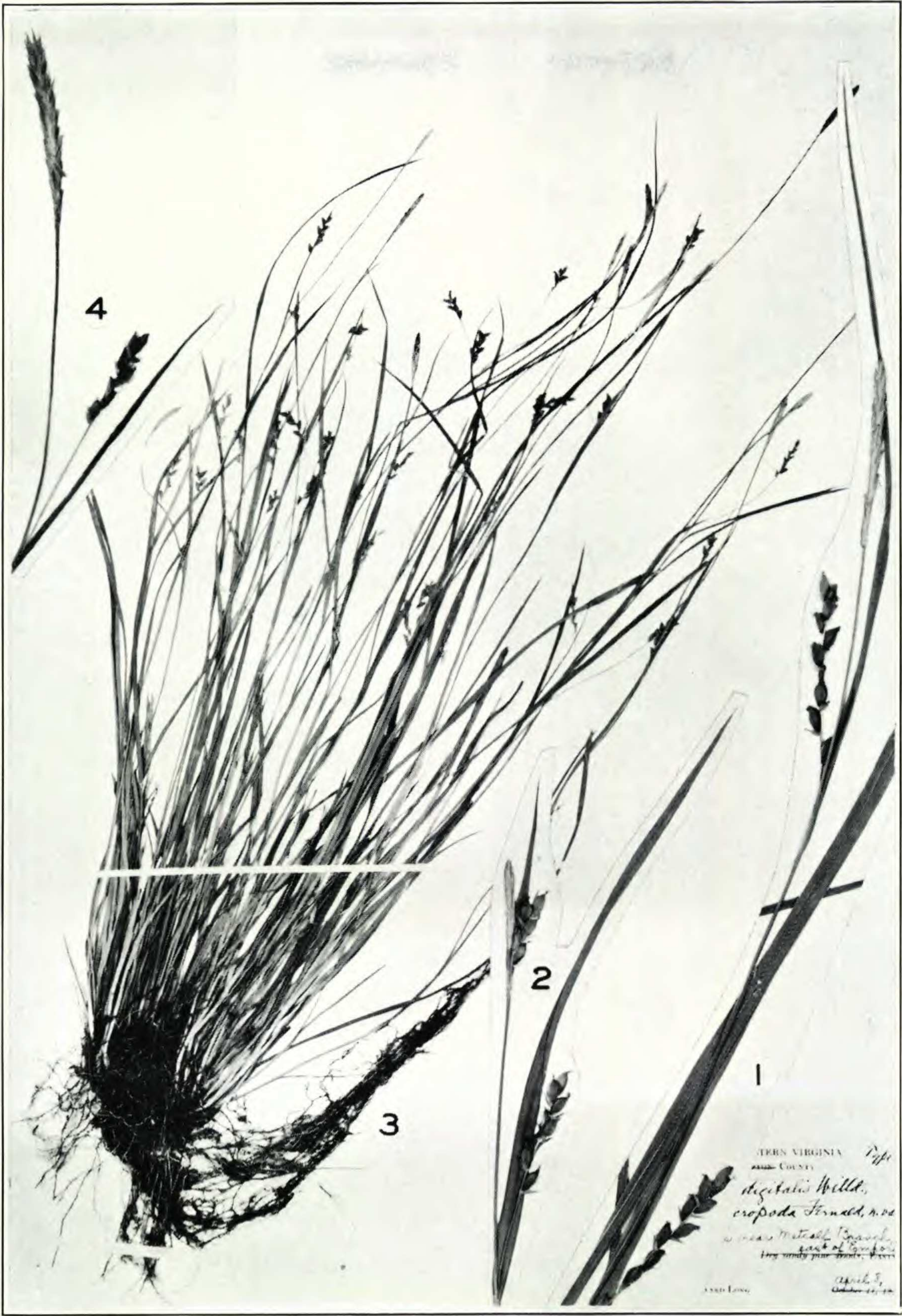


Photo. H. G. Fernald.

CAREX DIGITALIS: FIGS. 1 and 2, inflorescences, $\times 1$.
Var. MACROPODA: FIG. 3, type, $\times \frac{2}{5}$; FIG. 4, inflorescence, $\times 1$.

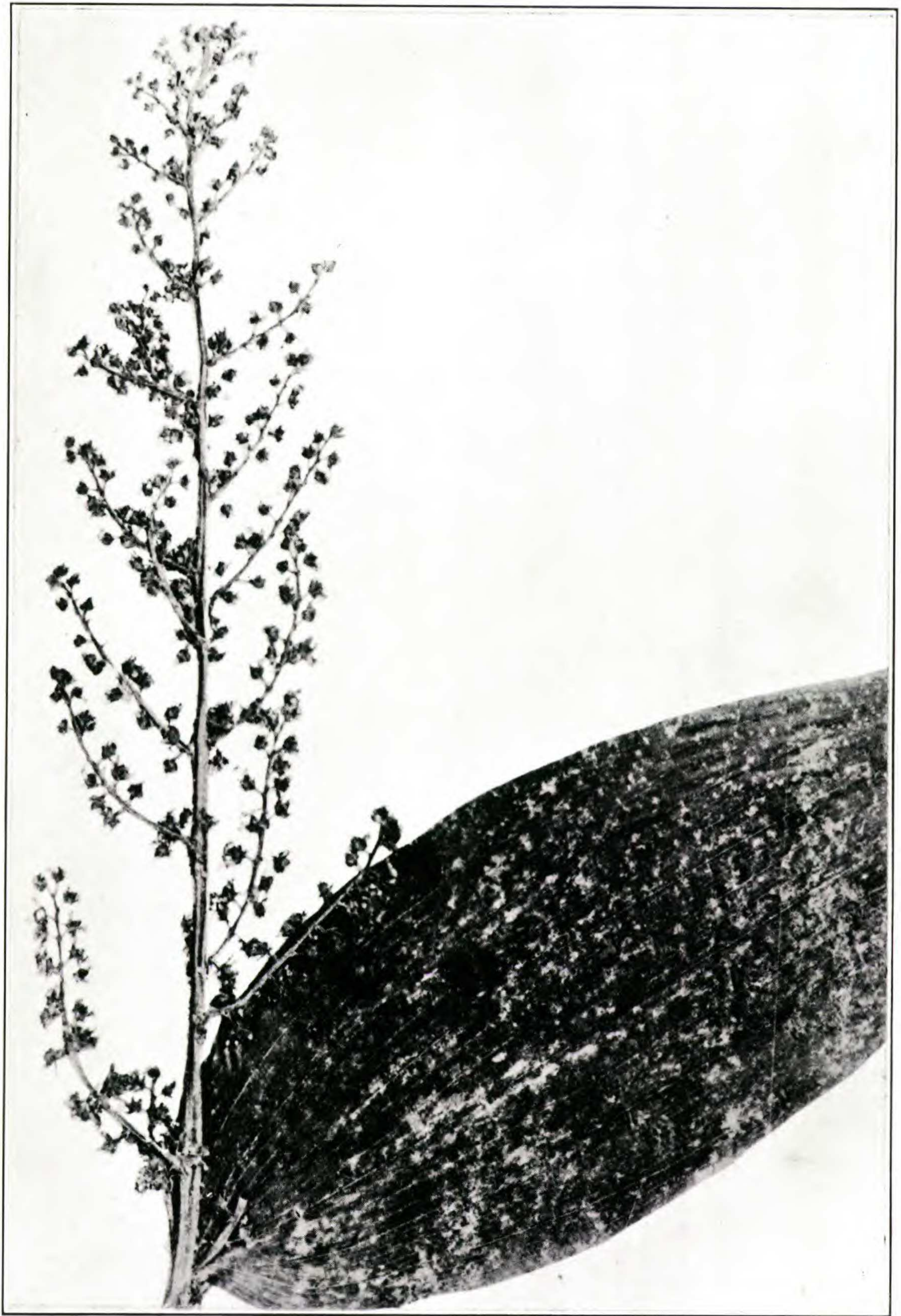


Photo. H. G. Fernald.

SMILACINA RACEMOSA, var. TYPICA: TYPE, $\times 1$, of *Convallaria racemosa* L. in Clifford Herbarium (courtesy of Mr. JOHN RAMSBOTTOM).

Engler, Pflanzenr. iv²⁰. 528 (1909), based on *C. podostachys* Steud. Syn. Cyp. 232 (1855), suggests that Steudel might have had var. *macropoda* before him from New Orleans. I have not seen Steudel's type but his plant was only 4–7 inches high, with "spica suprema mascula tenui solitaria plerumque foemineae primae approximata," suggesting ordinary *C. digitalis*; but the "foliis . . . lanceolatis" and spicis "foemineis . . . ex axillis infimis foliorum in pedunculo capillari filiformi culmum plus minusve aequante . . . pauci (sub-5-)floris," as well as the "utriculis . . . obtusiusculis" suggest that *C. podostachys* may not belong with *C. digitalis*. At least it is not *C. digitalis*, var. *macropoda*.

C. FLACCOSPERMA Dewey. To the record already published, from Norfolk County, add the following. SUSSEX COUNTY: border of wooded bottomland of Nottoway River, east of Stony Creek, no. 8156. SOUTHAMPTON COUNTY: wooded bottomland of Meherrin River, near Haley's Bridge, no 7772. GREENSVILLE COUNTY: rich deciduous woods by Metcalf Branch, east of Emporia, nos. 8157 (blue-green), 8158 (yellow-green). See p. 380.

C. CAROLINIANA Schwein. SOUTHAMPTON COUNTY: alluvial woods, bottomland of Meherrin River, Haley's Bridge, no. 8160, culms up to 1.65 m. high! See p. 377.

Our only station; the related *Carex complanata* Torr. & Hook. generally common.

C. BARRATTII Schwein. & Torr. To the only recorded Virginian station (near Waverly) add from SUSSEX COUNTY: open savannah-like swales in woods east of Stony Creek, no. 8140. GREENSVILLE COUNTY: wet cut-over sphagnous pine and oak woods, near Three Creek, north of Emporia, no. 8141.

Dominant, with *C. bullata*, *C. Buxbaumii* (new to Virginia), *Panicum scabriusculum* and *P. consanguineum* and other local species, over scores of acres of swale east of Stony Creek, probably one of its most extensive single areas of occurrence. See p. 381.

**C. BUXBAUMII* Wahlenb. SUSSEX COUNTY; open savannah-like swales in woods east of Stony Creek, no. 8144, one of the largest extremes of the species. See note under *C. Barrattii*. See p. 381.

Not seen by Mackenzie (N. Am. Fl.) from the state.

C. STRICTA Lam. To the first Virginian station (in Princess Anne County), already reported, add one from PRINCE GEORGE COUNTY: swampy woods, bottomland of Powell's Creek, Garysville, no. 8142.

C. COLLINSII Nutt. To the first Virginian station (in Sussex County), already reported, add one from GREENSVILLE COUNTY: sphagnous wooded spring-heads east of Emporia, no. 8172. HENRICO

COUNTY: boggy thicket bordering Whiteoak Swamp, west of Elko Station, no. 9005. See p. 380.

C. FRANKII Kunth. To the stations already reported (from Henrico and Sussex Counties) add the following. PRINCE GEORGE COUNTY: swampy woods, bottomland of Powell's Creek, Garysville, no. 8164. SURRY COUNTY: swampy calcareous wooded gullies by James River, Claremont Wharf, no. 8165; seen in similar habitat at Eastover. GLOUCESTER COUNTY: moist sandy border of pine woods, east of Gloucester, no. 8619. See p. 382.

C. SQUARROSA L. Local range extended southward through GREENSVILLE and SOUTHAMPTON COUNTIES.

C. GRAYII Carey. Local range extended eastward to SURRY COUNTY: bottoms of calcareous wooded gullies by James River, Claremont Wharf, no. 8169, and seen in similar habitat at Eastover; and southward to SOUTHAMPTON COUNTY: alluvial wooded bottomland of Meherrin River, near Haley's Bridge, no. 8170; both the minor var. *HISPIDULA* Gray. See p. 382.

C. BULLATA Schkuhr. To the first Virginian station (in Prince George County), already reported, add the following. PRINCE GEORGE COUNTY: inundated swampy thicket north of Templeton, no. 8173, culms up to 1 m. high. SUSSEX COUNTY: open savannah-like swales in woods east of Stony Creek, dominant, no. 8174 (see note under *C. Barrattii*); sphagnous depression, Wakefield, no. 8628. GREENSVILLE COUNTY: wooded swamp about 1 mile north of Skipper's no. 8629. HENRICO COUNTY: sphagnous springy swales bordering Whiteoak Swamp, west of Elko Station, no. 9003. See p. 381.

ARISAEMA DRACONTIUM (L.) Schott. SOUTHAMPTON COUNTY: alluvial wooded bottomland of Meherrin River, near Haley's Bridge, no. 8167.

Our only station on the Coastal Plain. See p. 377.

SYMPLOCARPUS FOETIDUS (L.) Nutt. SURRY COUNTY: along brook, rich calcareous wooded gullies at head of Sunken Meadow Creek, south of Claremont, local, no. 8179. See p. 382.

LACHNOCAULON ANCEPS (Walt.) Morong. To the recorded stations from other counties add one in SUSSEX COUNTY: pocket in pine woods bordering an open wooded swamp, $3\frac{1}{2}$ to 4 miles northeast of Homeville, no. 8181; also one in GREENSVILLE COUNTY: forming extensive turf in sphagnous bog, about 1 mile northeast of Dahlia, no. 8630.

XYRIS TORTA Sm., var. *MACROPODA* Fernald in RHODORA, xxxix. 395 (1937). To the original stations add from DINWIDDIE COUNTY: sphagnous boggy margin of spring-fed pond, Century House, northeast of Burgess, no. 7371; sphagnous bog about 1 mile northeast of Burgess Station, no. 7372. GREENSVILLE COUNTY: sphagnous bog about 1 mile northwest of Dahlia, no. 8632. BRUNSWICK COUNTY: argillaceous swale about 5 miles east-southeast of Edgerton, no. 8633. See p. 368.

X. *AMBIGUA* Beyrich. Local range extended westward to DINWIDDIE COUNTY: sphagnous bog about 1 mile north of Burgess, no. 7363; and GREENSVILLE COUNTY: wooded swamp of Mill Creek, north of Skipper's, no. 8634; and southeastward to NANSEMOND COUNTY: roadside ditch near St. Mary's Church, southwest of Whaleyville, no. 7368; roadside ditch bordering oak and pine woods, south of Suffolk, no. 7369.

**TRADESCANTIA ROSEA* Vent., var. *GRAMINEA* (Small) Anders. & Woodson. SOUTHAMPTON COUNTY: dry sand, pine barrens about 7 miles south of Franklin, nos. 7374, 8182; dry sandy old clearing north of Smith's Ferry, no. 8639. See pp. 366, 380.

First from north of North Carolina.

**PONTEDERIA LANCEOLATA* Nutt., forma *BRASILIENSIS* (Solms) Fernald in *RHODORA*, xxvii. 81 (1925). NANSEMOND COUNTY: margin of Somerton Creek, wooded bottomland, Factory Hill, nos. 8184, 8646. See p. 379.

First from north of Florida.

JUNCUS ELLIOTII Chapm. Local range extended to SUSSEX COUNTY: open savannah-like swales in woods east of Stony Creek, no. 8187; and GREENSVILLE COUNTY: wet cut-over sphagnous pine and oak woods near Three Creek, north of Emporia, no. 8186; seen at other stations. See p. 381.

Probably overlooked because of its early development.

J. BRACHYCARPUS Engelm. To the single station reported for Virginia add the following. SUSSEX COUNTY: swale south of Stony Creek, no. 8189; peaty swale and open wooded swamp $3\frac{1}{2}$ to 4 miles northeast of Homeville, nos. 8190, 8191. DINWIDDIE COUNTY: wet argillaceous depressions south of Petersburg, no. 8188; low clearing south of McKenney, no. 8651. GREENSVILLE COUNTY: peaty and argillaceous clearing about 4 miles southeast of Emporia, no. 8192. GLOUCESTER COUNTY: damp sandy border of woods east of Gloucester, no. 8652. See p. 378.

Apparently frequent or even common throughout the area. Heretofore considered one of the rarest species of the Atlantic States. Maturing very early (June) and over-ripe or shattered before the habitually similar midsummer- and autumn-fruiting *J. scirpoides* is conspicuous. Old and dried inflorescences are, late in the season, doubtless passed as last-year's inflorescences of the latter species.

LUZULA BULBOSA (Wood) Rydb. A most distinct species of woods and clearings in GREENSVILLE, SUSSEX and PRINCE GEORGE COUNTIES (many nos.). See p. 372.

L. ECHINATA (Small) Hermann. Rich woods, general eastward to NANSEMOND COUNTY (many nos.).

L. CAROLINAE Watson, var. **saltuensis** (Fernald), comb. nov. *L. saltuensis* Fernald in RHODORA, v. 195 (1903). *Juncoides pilosum* (L.) Coville, var. *saltuense* (Fernald) Farwell in Mich. Acad. Sci., Rep. xx. 170 (1918).

Luzula saltuensis, as it occurs in eastern Canada and the northernmost states is sufficiently different from the type of *L. carolinae* Watson in Proc. Am. Acad. xiv. 302 (1879). The latter was a single culm with the inflorescence overtopped by an erect frondose bract 1 dm. long. The longer branches of the inflorescence are forking, and the lower leaves are prolonged. The relative length of filament and anther differs in the northern series and the type of *L. carolinae* and it has seemed possible to hold the two series apart. In the Piedmont and Coastal Plain regions of Virginia, however, the plants have the forking rays of the inflorescence of *L. carolinae*, the anther-length proves variable and the bract at base of the inflorescence is, as in *L. saltuensis*, very short. Much study convinces me that the type of *L. carolinae* was an exceptional individual and that the large southern series, with some rays forking and with castaneous sepals, should be placed with it. Very evident transitions occur in western New York, southern Ontario and southern Michigan. This transitional series was named *Juncoides pilosum*, var. *michiganense* Farwell, l. c. (1918).

THE SOUTHERN VARIETY OF *SMILACINA RACEMOSA* (PLATES 512 and 513).—As it occurs in the northern portion of its range, from Quebec to British Columbia, thence southward to Nova Scotia, New England, most of New York and less characteristically southward, *Smilacina racemosa* (L.) Desf. has an ovoid to pyramidal panicle usually 1–1.5 dm. long and one-half to three-fourths as broad. From southern New England and northern New Jersey southward the species often has a subcylindric panicle usually less than 8 cm. long and only one-fourth to three-eighths as thick. Familiar with the plant of northeastern Canada and northern New England, I have been much impressed by these Virginian specimens in the field but have been unable to win a sympathetic response from my companion, Mr. Long. This apathy on his part was at once explained when I visited him at his home near Philadelphia while *Smilacina racemosa* was abundantly flowering in his woods, for the plant near Philadelphia is like that of most of eastern Virginia in having short and comparatively slender panicles. A comparison of the distinctive northern and the distinctive southern series brings out several strong tendencies which,

taken together, indicate a geographic segregation which should be given recognition. These are summarized below.

NORTHERN SERIES. Stem up to 1 m. high; larger leaves of mature plants 1–2.5 dm. long, 3.5–9.5 cm. broad; panicle sessile or on a peduncle usually less than $\frac{1}{2}$ its length, ovoid to pyramidal, 0.7–1.7 dm. long, 3–10 cm. in diameter, $\frac{3}{8}$ – $\frac{3}{4}$ as broad as long, its longer branches 2–6 cm. long and with 8–24 flowers. PLATE 512.

SOUTHERN SERIES. Stem rarely 7.5 dm. high; larger leaves of mature plants 0.85–1.7 dm. long, 3.5–6 cm. broad; peduncle $\frac{1}{2}$ – $\frac{5}{4}$ as long as the nearly cylindric panicle; the latter 4.5–8.5 (rarely –13) cm. long, 1.5–3 cm. in diameter, $\frac{1}{4}$ – $\frac{3}{8}$ as broad as long, its longest branches 1–2.5 cm. long, 6–10-flowered. PLATE 513.

Smilacina racemosa rests upon *Convallaria racemosa* L. Sp. Pl. i. 315 (1753), which in turn went back to *Polygonatum racemosum* Cornut (1635). The Linnean treatment was as follows:

5. CONVALLARIA foliis sessilibus, racemo terminali composito.

racemosa.

Convallaria racemo composito. Roy. lugdb. 26.

Convallaria foliis alternis, racemo terminali.

Hort. cliff. 125. *Gron. virg.* 38.

Polygonatum racemosum. Corn. canad. 36, t. 37.

Polygonatum ramosum & racemosum spicatum. Moris. hist. 3. p. 537. s. 13. t. 4. f. 9.

Polygonatum racemosum americanum, ellebori albi foliis amplissimis. Pluk. alm. 301. t. 311. f. 2.

Habitat in Virginia, Canada. ♀ [L. Sp. Pl. i. 315, 316 (1753)].

Linnaeus gave a brief original diagnosis. I have not seen the specimen in his herbarium and the series of photographs of Linnean types sent me by Mr. Savage does not contain it. The application of the name, however, is fairly clear, although Linnaeus confused, as have all subsequent botanists, the two varieties. Ultimately *Smilacina racemosa* goes back to *Polygonatum racemosum* Cornut, Canad. Pl. 36 and *P. ramosum* Cornut, l. c. 37 (1635), where the Canadian plant was described under the former and illustrated under the latter name. The illustration, ramose presumably through the intervention of the artist, shows apparently the common northern plant unnaturally forking at the middle, one leafy branch terminated by an ovoid panicle in flower the other by a similar panicle in fruit. Although highly conventionalised and presumably unnatural, the plate shows relatively short peduncles and is better for the northern than for the southern series of specimens. Chronologically the next reference given by Linnaeus was to Morison's *Plantarum Historiae* (1715).

Morison's figure was an almost exact copy from Cornut and his description compared the inflorescence to that of the grape. Insofar as Morison had any clear conception of the plant it was that of Cornut. The next reference, chronologically, was to Hortus Cliffortianus (1737), Linnaeus's own work and, therefore, representing his own concept. Two sheets of perfectly preserved specimens are in the Hortus Cliffortianus herbarium at the British Museum. For photographs of them I am indebted to the kindness of Mr. Ramsbottom. They are both marked in the hand of Linnaeus *Convallaria racemosa* and should stand as the types. The summit of one of them is shown, $\times 1$, as our PLATE 512. Its nearly or quite sessile inflorescence and the many-flowered branches place it immediately with the northern series of specimens, although the panicle is too slender for the majority of them. Gronovius (1739) cited Hortus Cliffortianus, but the Clayton specimen before him was undoubtedly the southern plant. Royen (1740) cited Hortus Cliffortianus, and other old references not mentioned by Linnaeus; and Plukenet (1749) illustrated the northern plant. There is, therefore, preponderant weight of argument (including Linnaeus's own specimens illustrating his Hortus Cliffortianus) for maintaining the larger-panicled and shorter-peduncled northern plant as true *Smilacina racemosa*.

So far as I can find there is no available name for the southern series, with somewhat lesser stature and long-peduncled, shorter and more slender panicle with fewer-flowered branches. *Smilacina ciliata* Desf. in Ann. Mus. d'Hist. Nat. Paris, ix. 53, t. 9 (1807) might have been based on it but the strongly bifurcate and trifurcate panicles shown are as atypical as was Cornut's *Polygonatum ramosum*. It was a cultivated plant, not easily matched in nature. I am, therefore, calling the southern series

SMILACINA RACEMOSA (L.) Desf., var. **cylindrata**, var. nov. (TAB. 513), a var. typica recedit caule humile rare 7.5 dm. alto; foliis maximis maturis 0.85–1.7 dm. longis 3.5–6 cm. latis; pedunculo elongato; panicula cylindrata vel subcylindrata 4.5–8.5 (rare–13) cm. longa, 1.5–3 cm. diametro, ramis longioribus 1–2.5 cm. longis 6–10-floris.—Georgia to Arizona, north to southern New Hampshire, central and western Massachusetts, southern New York, southern Ontario, Ohio, Indiana, Illinois, Kansas and Colorado. TYPE: dry mixed woods, Little Neck, Princess Anne County, Virginia, August 8 and 9, 1934, Fernald & Long, no. 3859. In PLATE 513, FIG. 1 is a flowering summit, $\times 1$, from Henrico County, Virginia; FIG. 2, the summit of the type, $\times 1$.

The coarser northern plant is

Var. **typica**. *Convallaria racemosa* L. Sp. Pl. i. 315 (1753), excluding citation of Gronovius in part. *Smilacina racemosa* (L.) Desf. in Ann. Mus. d'Hist. Nat. Paris. ix. 51 (1807). *S. racemosa*, forma *oliosa* Victorin in Contrib. Lab. Bot. Univ. Montréal, no. 14: 15, fig. 1 (1929).—Quebec to British Columbia, south to Nova Scotia, New England, Long Island, Pennsylvania, upland and rich valleys of Virginia and Tennessee, Michigan, Illinois, Missouri, Arizona and Oregon. PLATE 512.

That the ranges of the two overlap is obvious, and in these bordering areas the transitions are also obvious. North and south of the transition belt the two extremes are striking.

The only material of var. **TYPICA** I have seen from the Coastal Plain of Virginia is from **SURRY COUNTY**: rich wooded gullies along James River, below Sunken Meadow Beach, *Fernald & Long*, no. 8200, there associated with many upland and northern types.

SMILAX PULVERULENTA Michx. **SURRY COUNTY**: rich calcareous wooded gullies by James River, Claremont Wharf, no. 8203. See p. 382.

A species chiefly of the upland areas southward.

***NARCISSUS INCOMPARABILIS** Mill. **SOUTHAMPTON COUNTY**: "soft shoulder" of road, Ivor, no. 7799, an escape from cultivation.

***×N. BARRII** Hort. **SOUTHAMPTON COUNTY**: with the last, no. 7800.

HYPOXIS LEPTOCARPA Engelm. & Gray. To the two stations already recorded from the county add the following, also in **SOUTHAMPTON COUNTY**: alluvial wooded bottomland of Meherrin River, near Haley's Bridge, no. 8213. **NANSEMOND COUNTY**: wooded bottomland of Somerton Creek, about 2 miles east of Factory Hill, no. 8674, leaves up to 7 dm. long and 1.4 cm. broad!

***SISYRINCHIUM CAPILLARE** Bicknell. **SUSSEX COUNTY**: open pine-lands about 4 miles northwest of Waverly, no. 8214. See p. 381.

First from north of North Carolina.

S. MUCRONATUM Michx. **SURRY COUNTY**: beech woods, slopes of gully 1½ miles north of Surry, no. 8216.

Our first Coastal Plain station in Virginia.

ORCHIS SPECTABILIS L. **SURRY COUNTY**: rich calcareous woods at head of Sunken Meadow Creek, south of Claremont, no. 8219; rich calcareous wooded gullies by James River, Claremont Wharf, nos. 7804, 8218; seen in similar habitat at Eastover. See p. 375.

Our first Coastal Plain stations in Virginia.

CLEISTES DIVARICATA (L.) Ames. **SUSSEX COUNTY**: sphagnous siliceous boggy depression just northwest of Wakefield, no. 7392, only

a few plants, which will soon be wiped out by broadening of the automobile road. See p. 367.

SPIRANTHES OVALIS Lindl. To the single station (in Henrico County), already recorded, add SUSSEX COUNTY: alluvial woods, upper terrace of Nottoway River, southwest of Burt, no. 7394. SOUTHAMPTON COUNTY: alluvial wooded bottomland of Meherrin River, near Haley's Bridge. no. 8221. See pp. 366, 377.

PONTHIEVA RACEMOSA (Walt.) Mohr. To the few recorded stations add one from SURRY COUNTY: beech woods, slopes of gully $1\frac{1}{2}$ miles north of Surry, no. 8222. See p. 383.

APLECTRUM HYEMALE (Muhl.) Torr. SURRY COUNTY: rich wooded slope at head of Sunken Meadow Creek, south of Claremont, no. 7805; seen also on calcareous wooded slopes at Claremont Wharf. See p. 375.

POPULUS DELTOIDES Marsh. Banks and gullies along the James at least to SURRY COUNTY. See p. 383.

**MYRICA PUSILLA* Raf. Dry or moist sandy pinelands, scattered to frequent in SOUTHAMPTON, SUSSEX and southern ISLE OF WIGHT COUNTIES. Our specimens are from 4 miles northwest of Waverly, F. & L., no. 6992; south of Zuni, no. 6994; about 7 miles south of Franklin, nos. 6987, 6989, 6995, 7404 and 7405; Cypress Bridge, no. 6993.

Myrica pusilla is the dwarf, usually freely stoloniferous and colonial shrub ranging from 2 to 10 dm. high, or very exceptionally, and then probably through crossing with *M. cerifera*, slightly higher, further separated from *M. cerifera* by its obtuse oblanceolate to narrowly obovate leaves only 1.5–4 cm. long and by its fruits 3–4 mm. in diameter (the leaves of *M. cerifera* acute and mostly 4–9 cm. long, the fruits 2–3 mm. in diameter). It was Michaux's *M. cerifera*, γ . *pumila*, "fruticulosa: foliis minoribus, magis cuneatis . . . in aridis, a Carolina ad Floridam," raised to specific rank by Small in 1896 as *M. pumila* (Michx.) Small, with no further elucidation of its characters than "It seems strange that this so-called variety of *Myrica cerifera* has never before been given specific rank." Fifty-eight years earlier, however, Rafinesque in his "Alsographia Americana, Or an American Grove of New or revised Trees and Shrubs of Genera Myrica," etc. had described 7 species of *Myrica*. His *M. pusilla* was, for him, an unusually well described species:

20. *Myrica pusilla* Raf. cerif. pumila Bartr? caule pumilo piloso angulato, fol. sessilib. obov. and cuneatis, apice ineq. serratis acutis, supra rugosis, subtus ferrugineis glabris, margine et nervo ciliatis—minute shrub, only 3 to 6 inches high, in Alabama and Florida, leaves very un-

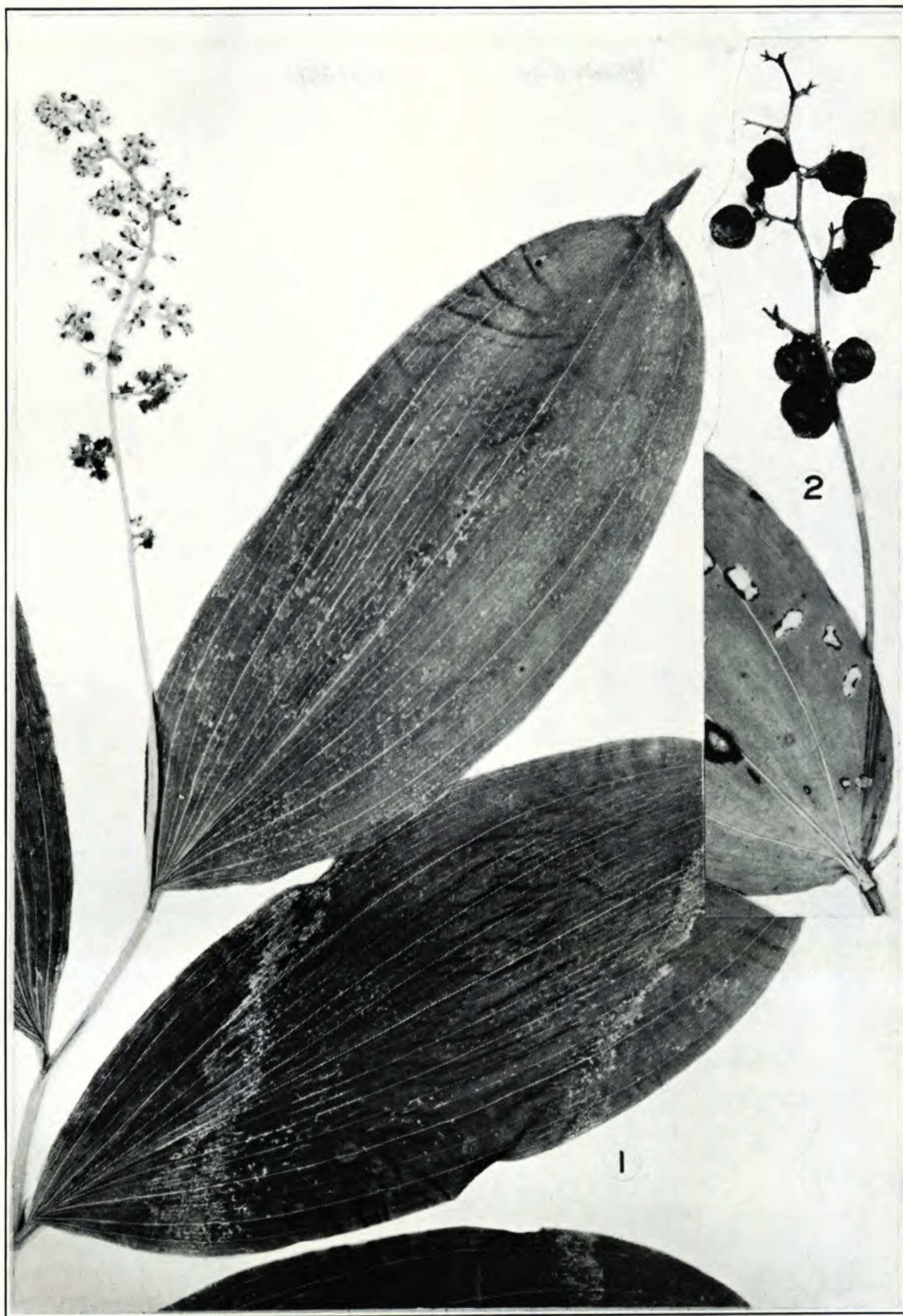


Photo. H. G. Fernald.

SMILACINA RACEMOSA, var. CYLINDRATA: FIG. 1, flowering tip, $\times 1$; FIG. 2, fruit of TYPE, $\times 1$.

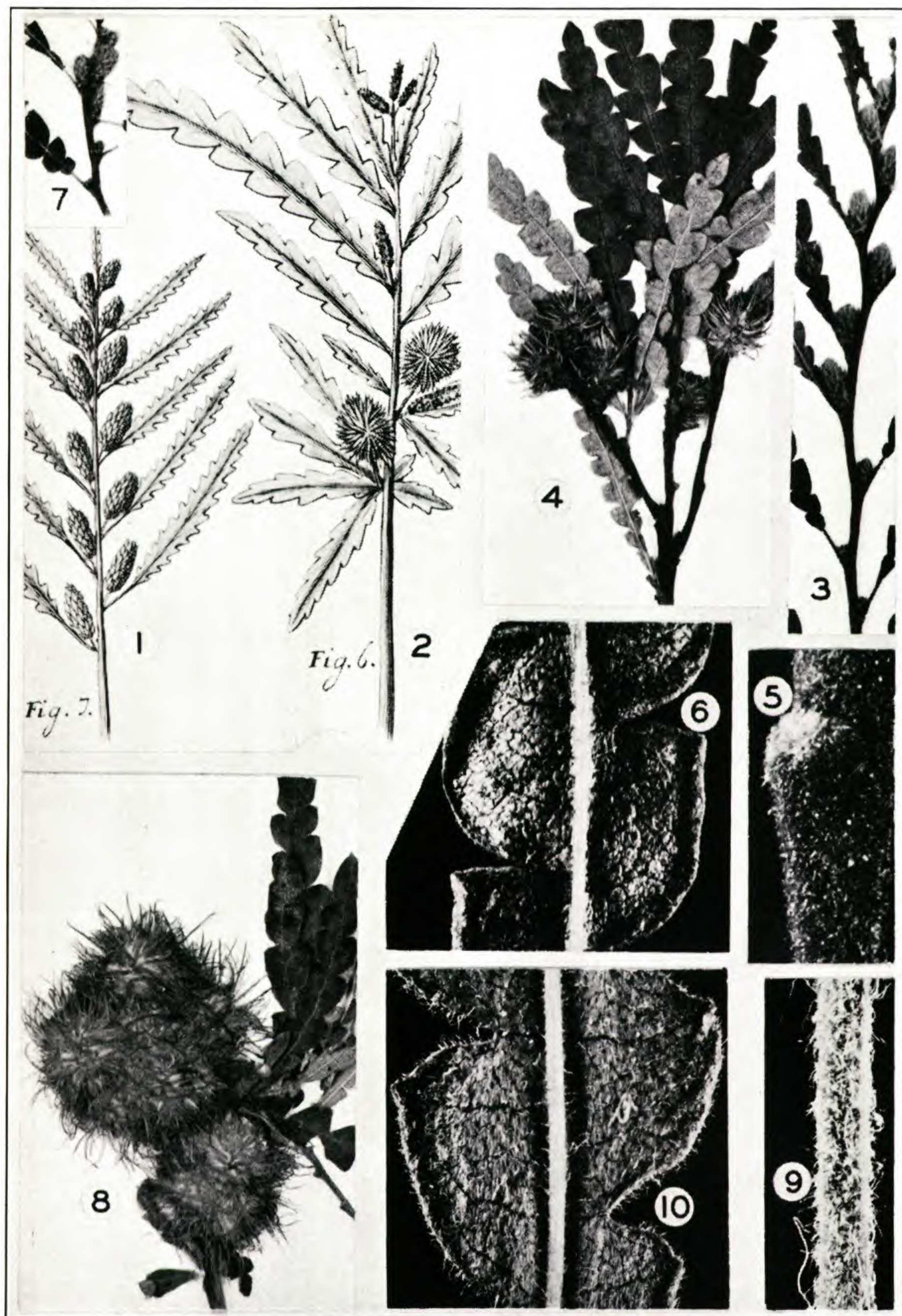


Photo. H. G. Fernald.

COMPTONIA PEREGRINA: FIG. 7, young staminate inflorescence, $\times 1$; FIG. 8, fruiting aments, $\times 1$; FIG. 9, young branchlet, $\times 10$; FIG. 10, lower surface of leaf, $\times 10$.

Var. ASPLENIFOLIA: FIGS. 1 and 2, staminate and pistillate branchlets of *Myrica brabanticae affinis americana*, *foliorum laciniis asplenii modo divisis* of Plukenet, basis of *Myrica asplenifolia* L., copied from PLUKENET, $\times 1$; FIGS. 3 and 4, staminate and pistillate branchlets, $\times 1$, from Virginia; FIG. 5, young branchlet, $\times 10$; FIG. 6, lower surface of leaf, $\times 10$.

equal and less than one inch long, Bartram calls them sinuate and yellow pulverulent.

There can be no question that Rafinesque had the dwarf, stoloniferous species of the southern coastal plain. The bibliography of the species is as follows.

MYRICA PUSILLA Raf. Alsogr. Am. 10 (1838). *M. cerifera*, γ . *pumila* Michx. Fl. Bor.-Am. ii. 228 (1803); Chevalier, Mon. Myric. 180 [264] (1901). *M. pumila* (Michx.) Small in Bull. Torr. Bot. Cl. xxiii. 126 (1896). *Cerothamnus pumilus* (Michx.) Small, Shrubs of Fla. 8, 133 (1913).

MYRICA HETEROPHYLLA Raf.

In RHODORA, xxxvii. 423, 424 (1935), I pointed out that the coarse evergreen shrub or small tree with oblong to narrowly obovate leaves lustrous above but more or less pubescent beneath and with blackish branches permanently pubescent is *M. Curtissi* Chevalier, var. *media* (Michx.) Chevalier, Mon. Myric. 186 [270] (1901), based upon *M. cerifera*, β . *media* Michx. Fl. Bor.-Am. ii. 228 (1803), in part. This coarse shrub or small tree is common at the inner margin of the Coastal Plain in southeastern Virginia, and Mr. Long assures me that it is characteristic also of the inner Coastal Plain in southern New Jersey. It extends southward to Florida. In Florida and rarely northward to southeastern Virginia a variety with glabrous (instead of pubescent) branchlets occurs. This is typical *M. Curtissi* Chevalier, l. c. 185 [269].

Unfortunately, Chevalier did not have access to Rafinesque's Alsographia Americana, with its very full treatment of *Myrica*, for he cites it always with doubt or upon the authority of others. There can be no question that Rafinesque's *M. heterophylla* was *M. Curtissi*, var. *media*. It is probable, likewise, that Rafinesque's *M. sessilifolia* and its var. *latifolia* were phases of the same shrub. I quote Rafinesque's accounts.

17. *Myrica heterophylla* Raf. arborea, ramis nigrescens pubesc. fol. ellipt. and obov. subpet. integris vel apice grosse serratis acutis, utrinque glabris sed nervo medio supra and subtus pubescens—Carolina to Florida, probably one of the sp. blended in *M. cerifera*. name unmeaning since all bear wax: leaves larger broader and thinner than in last, sometimes opposite, or obliquial, or really elliptical. Seen alive in gardens.

18. *Myrica sessilifolia* Raf. fruticosa, ramis cinereis puberis, fol. sessilib. cuneatis acutis, apice parce serratis, glabris, nervo medio subt. puberis, margine revolutis ciliolatis, drupis subracem. globosis parvis granulatis cerulescens—on the Sea Shores from New Jersey to Florida,

shrub 4 to 8 feet high, leaves smaller uncial, berries small, probably the *M. cerifera pumila* of Mx. not Bartram, which is 20.

19. Var. *latif.* diff. fol. nonnullis obovatis integris, vel obl. cuneatis acutis vix serratis—with the last, probably the var. *media* of Mx.

Myrica Curtissi, var. *media* is characteristic of the *inner* Coastal Plain in New Jersey and Virginia and southward, not on the "Sea Shores," but from New Jersey to southeastern Virginia the northern deciduous-leaved *M. pensylvanica* Loisel. chiefly follows the coastal sands and dunes but occasionally pushes inland. Although it is probable that Rafinesque's *M. sessilifolia* and especially its var. *latifolia* were in part based upon the former species, it is better to retain for it the first of his names, *M. heterophylla*, for the blackish pubescent branches, the elliptic or obovate leaves pubescent beneath, and the range, Carolina to Florida, all clearly indicate the coarse shrub or small tree which Chevalier called *M. Curtissi*, var. *media*. The bibliography follows.

MYRICA HETEROPHYLLA Raf. Alsog. Am. 9 (1838). *M. cerifera*, β *media* Michx. Fl. Bor.-Am. ii. 228 (1803) in part. ? *M. sessilifolia* and var. *latifolia* Raf. l. c. 10 (1838). *M. Curtissi*, var. *media* (Michx.) Chevalier, Mon. Myric. 186 [270] (1901).

Var. **Curtissi** (Chevalier), comb. nov. *M. Curtissi* Chevalier, Mon. Myric. 185 [269] (1901). To the station in Norfolk County previously noted by me add SOUTHAMPTON COUNTY: moist peaty and sandy depressions in pine barrens, about 7 miles south of Franklin, *F. & L.*, no. 7400. ISLE OF WIGHT COUNTY: sandy pine barrens south of Zuni, *F. & L.*, no. 6988.

In my earlier discussion I took up for the northern deciduous-leaved species which, southward, is strictly maritime, the name *M. pensylvanica* Loisel. Professor Rehder calls my attention to the fact that Loiseleur also spelled the specific name *pensylvanica*. Since the latter form was adopted by Chevalier in his monograph, this more usual spelling should prevail.

COMPTONIA PEREGRINA (L.) Coulter, var. **asplenifolia** (L.), comb. nov. *Myrica asplenifolia* L. Sp. Pl. ii. 1024 (1753). SOUTHAMPTON COUNTY: dry sandy open pine and oak woods 6 to 7 miles south of Franklin, no. 8229. See PLATE 514, FIGS. 1-6.

As noted on p. 379, *Comptonia* consists of two well defined varieties.

(1) A northern wide-ranging shrub with more or less pilose new branchlets and leaves; fruiting aments 1.5-2.5 cm. in diameter; nuts 4-5 mm. long; staminate aments subapproximate or approximate. FIGS. 7-10.

(2) A smaller shrub of Coastal Plain pinelands or pine barrens, with new branchlets minutely puberulent only; smaller leaves more sparsely

short-puberulent or glabrous (except for midrib); fruiting aments only 0.8–1.5 cm. in diameter; nuts 3–4 mm. long; staminate aments more scattered. FIGS. 1–6.

Linnaeus, in preparing *Species Plantarum* (1753), had both shrubs. The wide-ranging and more northern and inland shrub (our no. 1) was his

2. LIQUIDAMBAR foliis oblongis sinuatis. *peregrina*
Habitat in Canada. [Sp. Pl. 999].

The Coastal Plain shrub (our no. 2) was chiefly his

- asplenifolia.* 3. MYRICA foliis oblongis alternatim sinuatis. *Hort.*
cliff. 456. *Gron. virg.* 142. *Cold. noveb.* 224.
Gale mariana, asplenii folio. Pet. mus. 773.
Myrti brabanticae affinis americana, foliorum laciniis
asplenii modo divisis. Pluk. alm. 250. *t.* 100. *f.* 6.7.
Habitat in America septentrionali. ♀
 [Sp. Pl. 1024].

Colden's plant of New York was, of course, our no. 1. Otherwise, the plants which Linnaeus had before him (those of *Hortus Cliffortianus*, Gronovius and Plukenet) were chiefly our no. 2. Linnaeus's own work, *Hortus Cliffortianus*, merely refers to the treatment by Plukenet. Plukenet, who erroneously thought the shrub came from Brasil, although he had much material from Maryland and Virginia, gave two very clear figures (here reproduced as our figs. 1 and 2) showing the characteristic Coastal Plain shrub with no pilosity indicated, the very small fruiting ament and the remote young staminate aments. Our FIGS. 3 and 4 show parallel portions from our Virginian collection (no. 8229), while FIG. 5 indicates the puberulence, $\times 10$, of the young branchlet, FIG. 6 the lower surface of the leaf of no. 8229, $\times 10$. Gronovius merely referred to *Hortus Cliffortianus*, but cited two collections by Clayton, one (from Middlesex County on the Coastal Plain) doubtless our no. 2, the other (from shaded bluffs of North Anna River, in the interior) possibly our no. 1. In view, however, of the convergence of the more important Linnean references upon the Plukenet figures it is right to consider *Myrica asplenifolia* as based chiefly upon them and the specimens (at one time accessible to Linnaeus) upon which they were based.

As to the correct name to take up, usage through a century or more has favored *Myrica asplenifolia* (1753), while *Liquidambar peregrina*, published in the same work (1753), has been more often treated as a synonym. Linnaeus, however, settled the question when he united

the two in 1759, in his *Systema Naturae*, ed. 10, ii. 1273 (1759), treating them as *Liquidambar*

peregrina. 2. L. fol. oblongis sinuatis. *Myrica asplenifolia*. *Spec. pl.*

The two being first united under the specific name *peregrina* we are forced, unhappily, to take that as the correct specific name.

Briefly, the bibliography of the two is as follows,

COMPTONIA PEREGRINA (L.) Coulter in Mem. Torr. Bot. Cl. v. 127 (1894); Chevalier, Mém. Soc. Sci. Nat. & Math. Cherbourg, xxxii. 196—repr. Monogr. Myric. 109 (1901). *Liquidambar peregrina* L. Sp. Pl. ii. 999 (1753), Syst. Nat. ed. 10, ii. 1273 (1759) in part. *C. Ceterach* Mirbel in Duham. Arb. ed. nov. ii. t. 11 (1804) in part. *Myrica Comptonia* (Banks) A. DC. Prodr. xvi². 151 (1864), largely. *M. peregrina* (L.) Ktze. Rev. Gen. Pl. 638 (1891). *C. peregrina*, var. *tomentosa* Chevalier, l. c. 196 [112] (1901)—Quebec to Manitoba, south to Virginia, West Virginia, Ohio, northwestern Indiana, Wisconsin and Minnesota, and in the upland to northern Georgia and Tennessee. FIGS. 7-10.

Var. ASPLENIFOLIA (L.) Fernald. *Myrica asplenifolia* L. Sp. Pl. ii. 1024 (1753), as to plant of Hortus Cliffortianus, Plukenet, etc., not of Colden. The names cited above as in part belonging to *C. peregrina* are in part, also, synonyms of var. *asplenifolia*.—Dry sandy pinelands and barrens of the Coastal Plain, Virginia to Long Island. FIGS. 1-6.

JUGLANS CINEREA L. Banks and gullies along the James at least to SURRY COUNTY. See p. 375.

OSTRYA VIRGINIANA (Mill.) Koch. The typical northern and inland tree, with glabrous branchlets, extending down the James at least to SURRY COUNTY. See p. 382.

*FAGUS GRANDIFOLIA Ehrh., var. CAROLINIANA (Loud.) Fern. & Rehder, forma MOLLIS Fern. & Rehder. SOUTHAMPTON COUNTY: wooded slope, bordering river-swamp, Cypress Bridge, no. 6997.

QUERCUS MONTANA L. (*Q. Prinus* of authors, not L.) SURRY COUNTY: rich woods and thickets back of sand-beach of the James, below Sunken Meadow Beach, no. 7238; seen at Eastover. See p. 382.

Isolated from the Piedmont area.

Q. LAEVIS Walt. To the long-known station in Isle of Wight County add for SOUTHAMPTON COUNTY: dry sand, pine barrens about 7 miles south of Franklin, no. 7415. See p. 366.

Q. CINEREA Michx. SOUTHAMPTON COUNTY: dry sand, pine barrens about 7 miles south of Franklin, nos. 7418, 7419, 8242. See p. 366.

Previously known in the state only at Cape Henry.

Q. BOREALIS Michx., var. MAXIMA (Marsh.) Ashe. SURRY COUNTY:

rich alluvial woods and thickets back of the sand-beach of the James, Claremont Wharf, no. 8241; seen at Eastover. See p. 382.

A species of the interior.

ULMUS FULVA Michx. Follows down the James and near-by gullies to SURRY COUNTY. See p. 375.

LAPORTEA CANADENSIS (L.) Gaud. Follows down the James and near-by gullies at least to SURRY COUNTY. See p. 382.

THE GEOGRAPHIC VARIETIES OF POLYGONUM SETACEUM (PLATE 515). In eastern Virginia *Polygonum setaceum* occurs in three strikingly different phases: 1st, a plant of swamps of the outer Coastal Plain (in Princess Anne County thence up the valley of the James at least to Prince George County), with the leaves copiously long-strigose above and usually beneath (FIGS. 1 and 2); 2nd, a plant at the border of the Piedmont (Dinwiddie County and locally to Nansemond), with the leaves short-strigose above and short-strigose to glabrous beneath (FIGS. 3 and 4); 3rd, the plant of the rich alluvial bottoms of the inner Coastal Plain (Sussex, Southampton, Isle of Wight, Nansemond and James City Counties), with leaves nearly or quite glabrous on both surfaces. Obviously, these three plants do not all accord with Small's key-character: "leaf-blades copiously loosely strigose"; and study of the series in the Gray Herbarium indicates that the three are well defined geographic varieties. The first occurs from Florida to Texas, northward to Cape Henry, Virginia and up the lower James and, apparently isolated, in southern New Jersey; the second is more northern and inland, from Cape Cod to north-central New York, south to the outer Piedmont of Virginia; and it is in northern Indiana. The third is as yet known only from southeastern Virginia and in Oklahoma.

I am defining them as follows:

Leaf-surfaces (especially when young) strigose above.

Strigosity of upper leaf-surface of mixed short and long hairs, the latter 0.8–1.5 mm. long; hairs of lower surface similar, usually abundant; ochreae copiously strigose-villous. Var. *typicum*.

Strigosity of upper leaf-surface wholly or chiefly of stiffer hairs only 0.2–0.5 (rarely –0.8) mm. long; lower surface similarly strigose or more often glabrous; ochreae more remotely strigose. Var. *interjectum*.

Leaf-surfaces glabrous or essentially so; ochreae only sparsely strigose. Var. *tonsum*.

P. SETACEUM Baldw., var. **typicum**. *P. setaceum* Baldw. ex Ell. Sk. i. 455 (1817).—Swamps, shores and low woods, Texas to Florida,

north to Princess Anne, Surry and Prince George Counties, Virginia; Cape May, New Jersey. FIGS. 1 and 2.

*Var. **interjectum**, var. nov. (TAB. 515, FIG. 3 et 4), ochreis subremote strigosis; foliis supra scabro-strigosis, strigis 0.2–0.5 (–0.8) mm. longis, subtus breviter strigosis vel glabris.—Southeastern Massachusetts to Oswego County, New York, south to Dinwiddie County, Virginia; northwestern Indiana. MASSACHUSETTS: moist thicket along Doane Creek, Harwich, August 13, 1918, *Fernald & Long*, no. 16,749 (TYPE in Gray Herb.); September 11, 1919, *Fernald* in Pl. Exsicc. Gray. no. 356; moist sandy overflow from cultivated cranberry bog, Doane Creek, Harwich, August 30, 1918, *Fernald & Long*, no. 16,750; brookside near mouth of Red River, Harwich, August 8, 1919, *Fernald & Long*, no. 18,402. RHODE ISLAND: edge of bushy swamp, Westerly, August 25, 1924, *Weatherby*, no. 5361. NEW YORK: wet shore of Sweezy Pond, Southampton, July 26, 1920, *St. John*, no. 2703; along brooks in swampy woods and thickets overlying Silurian (Medina) sandstones, Mud Pond, Oswego, August 23, 1922, *Fernald, Wiegand & Eames*, no. 14,269. VIRGINIA: border of swampy woods northwest of Carson, Dinwiddie County, September 14, 1937, *Fernald & Long*, no. 7429; low clearing, south of McKenney, Dinwiddie County, July 18, 1938, *Fernald & Long*, no. 8703; swale by tidal stream northeast of Suffolk, Nansemond County, July 21, 1938, *Fernald & Long*, no. 8701. INDIANA: under *Cephalanthus*, edge of a *Chamaedaphne* bog near Rolling Prairie, La Porte County, July 31, 1920, *D. C. Peattie*.

*Var. **tonsum**, var. nov. (TAB. 515, FIG. 5 et 6), ochreis sparse strigosis; foliis utrinque glabris.—VIRGINIA: open situation beside stream, 1½ miles west of Williamsburg, October 7, 1920, *Grimes*, no. 3170; alluvial woods, Coppahaunk Swamp, about 3 miles southeast of Waverly, September 10, 1937, *Fernald & Long*, no. 7428; swampy woods by Blackwater River, south of Zuni, August 24, 1936, *Fernald & Long*, no. 6589; siliceous and argillaceous alluvium bordering cypress swamp, bottomland of Nottoway River, above Cypress Bridge, July 23, 1936, *Fernald & Long*, no. 6198 (TYPE in Gray Herb.; ISOTYPE in Herb. Phil. Acad.); margin of Somerton Creek, Factory Hill, July 20, 1938, *Fernald & Long*, no. 8700. OKLAHOMA: "common," Sapulpa, September 25, 1894, *Bush*, no. 509 (young foliage sparsely strigose).

PARONYCHIA CANADENSIS (L.) Wood. See RHODORA, xxxviii. 418 (1936). SUSSEX COUNTY: rich wooded slope, 4 miles south of Stony Creek, no. 8254.

*SPERGULA ARVENSIS L., var. SATIVA (Boenn.) Reichenb. SUSSEX COUNTY: weed in roadside fill ("soft shoulder"), recently seeded, about 4 miles south of Jarratt, no. 7817. See p. 373.

STELLARIA PUBERA Michx. Extending into the Coastal Plain in

PRINCE GEORGE COUNTY: sandy, loamy wooded slopes along Powell's Creek, Garysville, no. 7818. See p. 375.

**CERASTIUM TETRANDRUM* Curtis. SUSSEX COUNTY: weed in sandy field, Wakefield, no. 7819. See p. 373.

A European species not heretofore recognized in this country.

HOLOSTEUM UMBELLATUM L. GREENSVILLE COUNTY: cultivated field 1 mile south of Emporia, no. 7820. See pp. 372, 373.

Very local in eastern Virginia.

SILENE CAROLINIANA Walt. SURRY COUNTY: rich woods on fossiliferous sandy slopes of gullies near Claremont Wharf, no. 7822. DINWIDDIE COUNTY: plentiful in sandy woods by Steere's Millpond, east of Burgess, *Meade Lewis* (our no. 8257).

S. VIRGINICA L. GREENSVILLE COUNTY: rich deciduous woods by Metcalf Branch, east of Emporia, no. 8258. See p. 380.

Our only station on the Coastal Plain of Virginia; the plants are of the form with petals only shallowly notched or emarginate, instead of deeply cleft. Further consideration may show this difference to have phytogeographic significance.

S. STELLATA (L.) Ait. f. SOUTHAMPTON COUNTY: border of sandy woods about 3 miles east of Drewryville, no. 7434. SURRY COUNTY: rich wooded slope by James River, Eastover, no. 8708. HENRICO COUNTY: border of woods, Elko Station, no. 8709.

Our only Coastal Plain stations, although Grimes had two additional ones on the Peninsula of Virginia.

CLAYTONIA VIRGINICA* L., forma *micropetala***, f. nov. (TAB. 516, FIG. 1), forma petalis anguste oblongis 3–5 mm. longis; staminibus valde exsertis.—VIRGINIA: a small colony, in the midst of abundant typical *C. virginica*, loamy wooded slope along tributary of Chippoak Creek, east of Cabin Point, Surry County, April 5, 1938, *Fernald & Long*, no. 7823 (TYPE in Gray Herb.; ISOTYPE in Herb. Phil. Acad.).

Typical and abundant *Claytonia virginica* (FIG. 2) has the large and broad petals conspicuously longer than the sepals and definitely exceeding the stamens. Forma *micropetala*, occurring in the midst of the ordinary plant, is a striking sport.

**NYMPHAEA ALBA* (L.) Presl, forma *ROSEA* Hartm. f. DINWIDDIE COUNTY: thoroughly naturalized (dominating) in peaty spring-fed pond, Century House, northeast of Burgess, no. 7436. See p. 368.

BRASENIA SCHREBERI Gmel. DINWIDDIE COUNTY: peaty spring-fed pond, Century House, northeast of Burgess, no. 7437. PRINCE GEORGE COUNTY: Miner's Pond, about 3 miles south of Petersburg, no. 8262.

RANUNCULUS AMBIGENS Wats. To the single station (in Chester-

field County) already recorded add one in SOUTHAMPTON COUNTY: alluvial wooded bottomland of Meherrin River, near Haley's Bridge, no. 8263.

RANUNCULUS ABORTIVUS AND ITS EASTERN AMERICAN ALLIES (PLATES 517-519). *Ranunculus abortivus* L., as treated by Gray, was a very inclusive species. By the removal of *R. allegheniensis* Britton (PL. 517, FIG. 1), *R. micranthus* Nutt. (PL. 517, FIGS. 2 and 3) and *R. Harveyi* (Gray) Britton (PL. 517, FIG. 4) it becomes greatly simplified but it is still a highly variable type in which I recognize 4 geographic varieties. In order to clarify the species I append a key to the small group to which it belongs, in the area covered by Gray's Manual. Since some of these have not been adequately illustrated I am including photographs to show at least the diagnostic characters; and am giving a statement of range of each.

- a. Achenes 1.5-2 mm. long, with firm subulate beak.
 Stems weak, flexuous, villous, 1-4-flowered; sepals spreading, 3-5 mm. long; petals 4-6 mm. long; alpine species. . . . *R. Allenii*.
 Stems firm, erect, glabrous, corymbose-cymose, many-flowered; sepals reflexed, 2.5-3.5 mm. long; petals 1.5-2.3 mm. long; Alleghenian species. *R. allegheniensis*.
- a. Achenes 1.1-1.5 mm. long, the beak obsolete or soft and minute.
 Roots slender and fibrous; simple radical leaves 1-9.5 cm. broad, with 9-43 marginal teeth; sepals 2.5-5 mm. long, sessile; fruiting heads 3-4.5 mm. thick; achenes lustrous; receptacle hairy. *R. abortivus*.
 Roots fusiform-thickened; simple radical leaves 0.8-2.5 cm. broad, with 5-13 marginal teeth; sepals 2-3.5 mm. long, abruptly contracted to a claw; fruiting heads 2.5-3.3 mm. thick; achenes dull; receptacle glabrous.
 Uncleft basal leaves cuneate, rounded or barely subcordate at base, often mixed with divided ones; petals 2-3.5 mm. long, about equaling sepals. *R. micranthus*.
 Uncleft basal leaves cordate or subcordate, rarely mixed with divided ones; petals 4-8 mm. long, much exceeding sepals. *R. Harveyi*.

R. ALLENI Robinson in RHODORA, vii. 220 (1905).—Wet gravel and flood-plains of alpine brooks, northern Labrador and Shickshock Mts. Quebec. PL. 517, FIGS. 5 and 6.

R. ALLEGHENIENSIS Britton in Bull. Torr. Bot. Cl. xxii. 224 (1895). *R. abortivus*, form, Hook. Fl. Bor.-Am. i. 15 (1829).—Rich woods and rocky calcareous or basic slopes, rarely in meadows, rather local, Massachusetts to Ohio, south to North Carolina and Tennessee. PL. 517, FIG. 1.

R. ABORTIVUS L. See below.

R. MICRANTHUS Nutt. in Torr. & Gray, Fl. N. Am. i. 18 (1838). *R. abortivus*, var. *micranthus* (Nutt.) Gray, Man. ed. 2: 9 (1856).—

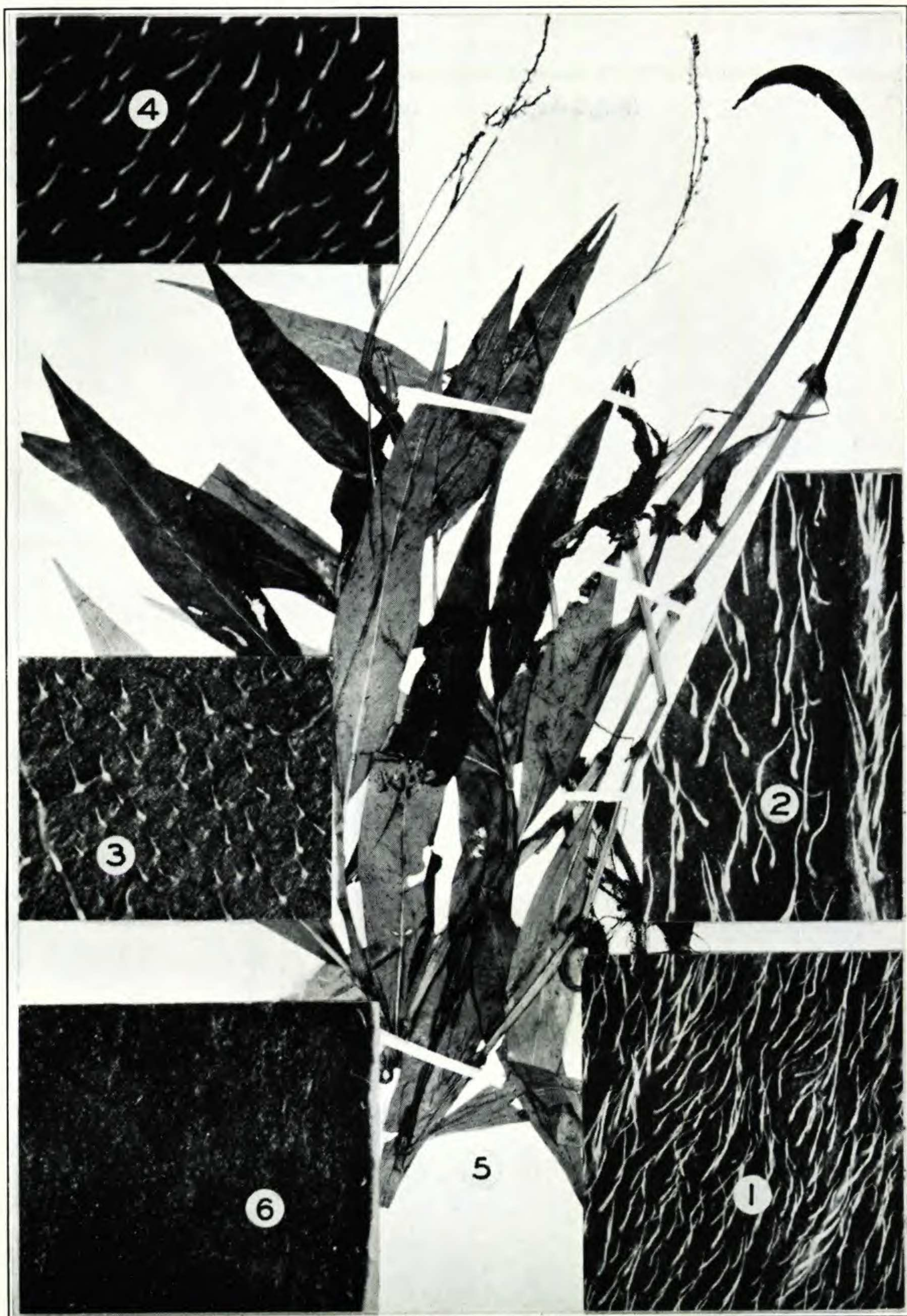


Photo. H. G. Fernald.

POLYGONUM SETACEUM, var. TYPICUM: FIGS. 1, lower, and 2, upper surface of leaf, $\times 10$.

Var. INTERJECTUM: FIGS. 3, lower, and 4, upper surface of leaf, $\times 10$, from TYPE.

Var. TONSUM: FIG. 5, TYPE, $\times \frac{2}{5}$; FIG. 6, upper surface of leaf, $\times 10$, from TYPE.



Photo. H. G. Fernald.

CLAYTONIA VIRGINICA: FIG. 2, young inflorescence, $\times 1$.
 Forma MICROPETALA: FIG. 1, TYPE, $\times 1$.